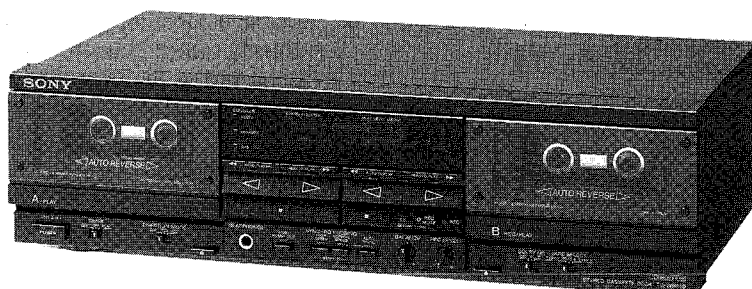


TC-WR800

SERVICE MANUAL

AEP Model



Model Name Using Similar Mechanism	New Mechanism	
Tape Transport Mechanism Type	deck A	TCM-170RA2
	deck B	TCM-170RB4

SPECIFICATIONS

Recording system 4-track 2-channel stereo
 Fast-forward and rewind time Approx. 90 sec. (with C-60 cassette)
 Bias AC Bias
 Signal-to-noise ratio (NAB, at peak level)

Dolby NR switch	OFF	B-TYPE ON	C-TYPE ON
Cassette			
TYPE IV (Sony METAL-ES)	58 dB	65 dB	71 dB
TYPE II (Sony UX-S)	57 dB	64 dB	70 dB
TYPE I (Sony HF-S)	54 dB	61 dB	67 dB

Total harmonic distortion 1.0 % (with Sony METAL-ES cassettes)

Frequency response (DOLBY NR OFF)

TYPE IV cassette (Sony METAL-ES)	30–18,000 Hz (± 3 dB, DIN) 30–15,000 Hz (0VU recording ± 3 dB)
TYPE II cassette (Sony UX-S)	30–17,000 Hz (± 3 dB, DIN)
TYPE I cassette (Sony HF-S)	30–15,000 Hz (± 3 dB, DIN)

Wow and flutter 0.09% WRMS (NAB), ± 0.19 W Peak (DIN)


Inputs

Line inputs (phono jacks)	Sensitivity	77.5 mV (-20 dB)
	Input impedance	50 k ohms

Outputs

Line outputs (phono jacks)	Rated output level	0.44 V (-5 dB) at a load impedance 47 k ohms
	Load impedance	Over 10 k ohms
Headphone output (stereo phone jack)	Output level	-28 dB at 8 ohms

— Continued on page 2 —

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
 "DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

STEREO CASSETTE DECK
SONY®



General**Power requirements**

220 V AC, 50/60 Hz

Power consumption

25 W

DimensionsApprox. 430×118×255 mm (w/h/d)
(17×4³/₄×10 inches)**Weight**including projecting parts and controls
Approx. 4.6 kg (10 lbs 3 oz)**Supplied accessories**

Audio connecting cord (2)

Remote control cord (4-pin) (1)



FEATURES

- **B and C type Dolby NR* system** reduces tape hiss noise.
- **Relay function** for long playback
- **Two-speed synchro dubbing:** normal and high (double-speed)
- **AMS and blank skip functions** provide easy access to a desired selection.
- **Easy-to-read digital tape counter** equipped with memory function (for decks A and B)
- **Handy remote control operation** (with the optional Sony RM-88 wireless remote control unit)

TABLE OF CONTENTS

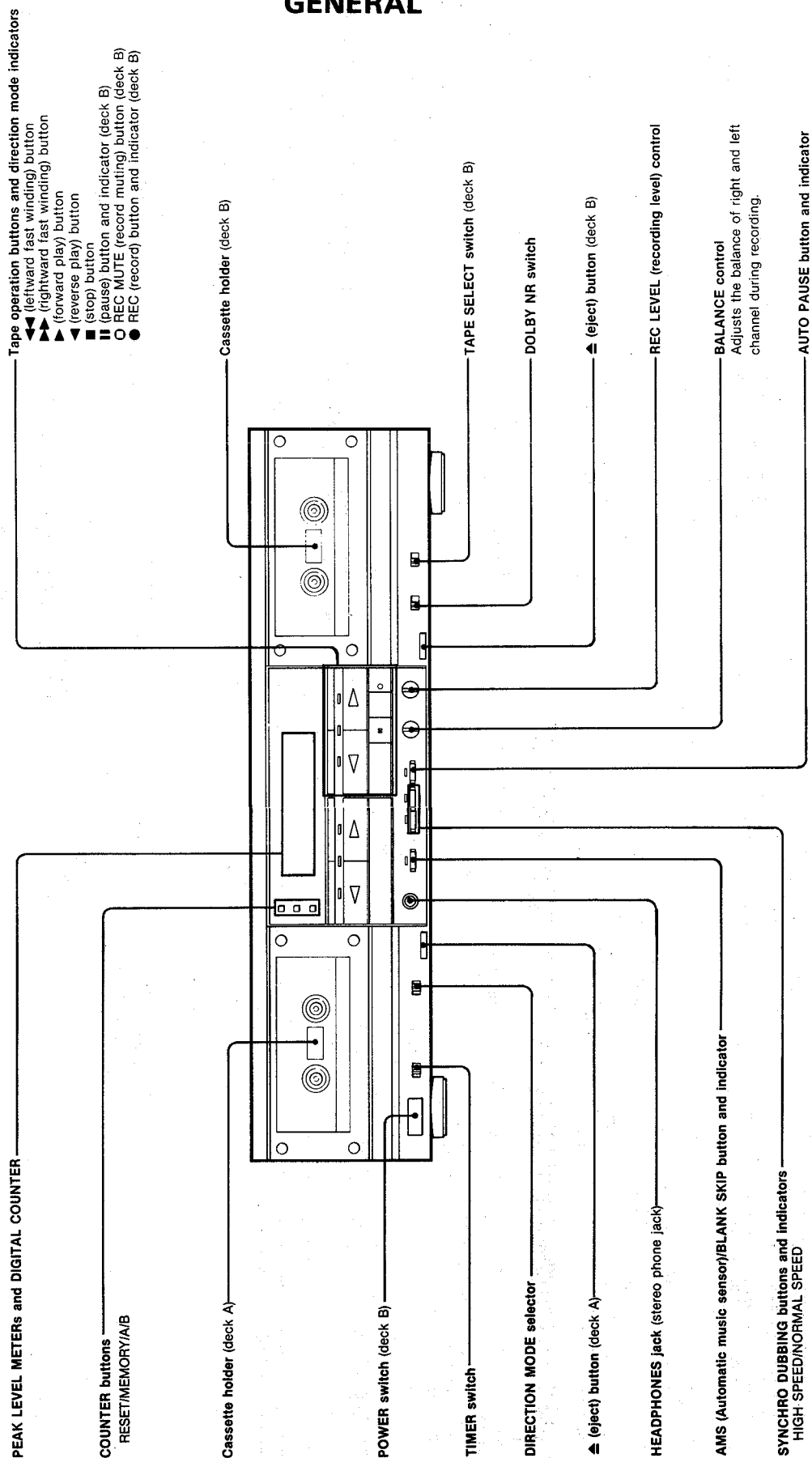
<u>Section</u>	<u>Title</u>	<u>Page</u>
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	Connections	4
2. DISASSEMBLY		5
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SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

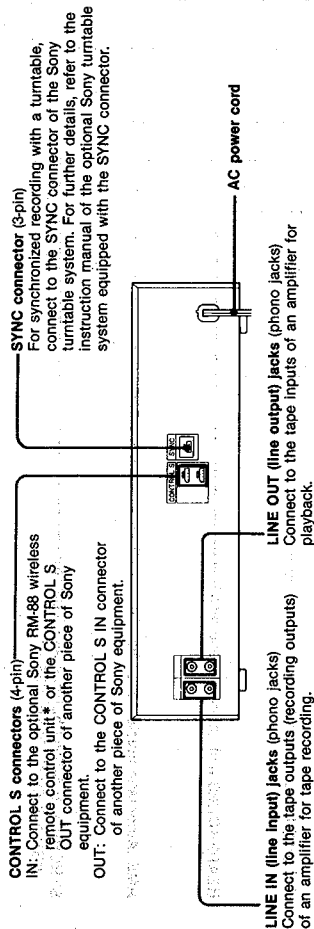
SECTION 1 GENERAL

LOCATION AND FUNCTION OF CONTROLS



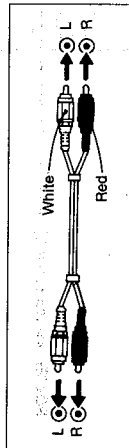
CONNECTIONS

Parts Identification of the Rear Panel



Notes on Connections

- Turn off the power to all equipment before making any connection.
- Note that the red plug of the supplied connecting cord is for right-channel (R) connection and the white plug for left-channel (L) connection.

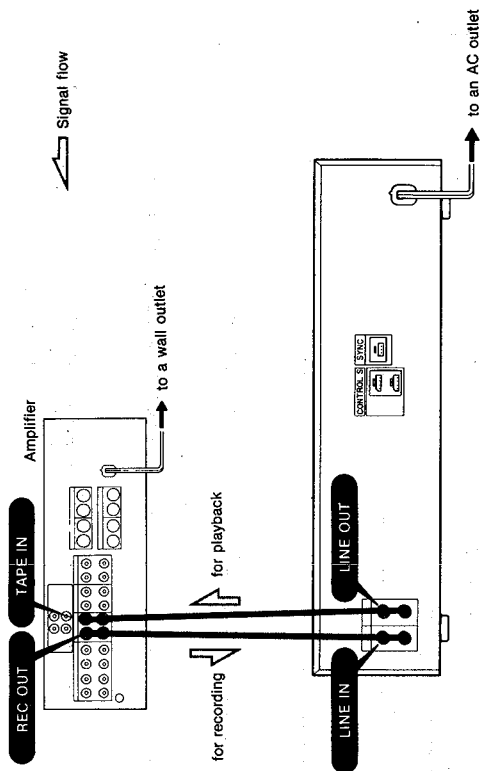


- The connecting cords should be fully inserted into the jacks. A loose connection may cause hum pick-up.

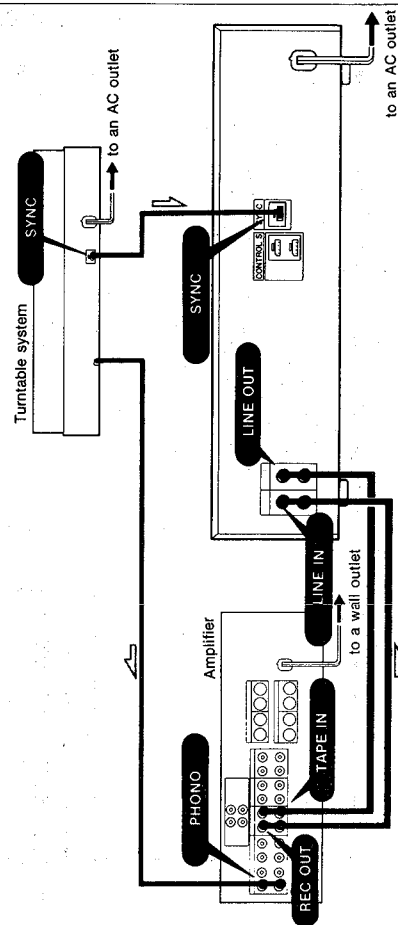
Flat cord connection	<p>Remote control cord (4-pin)</p>	<p>Synchro remote control cord (3-pin)</p>
<p>Be sure to insert the cord firmly.</p>		
<p>To disconnect the cord, pull out the connector. Do not pull the cord itself.</p>		

* The remote control unit functions only on the deck in which the cassette is inserted. If both decks are loaded, the unit controls only the deck B.

Basic connection



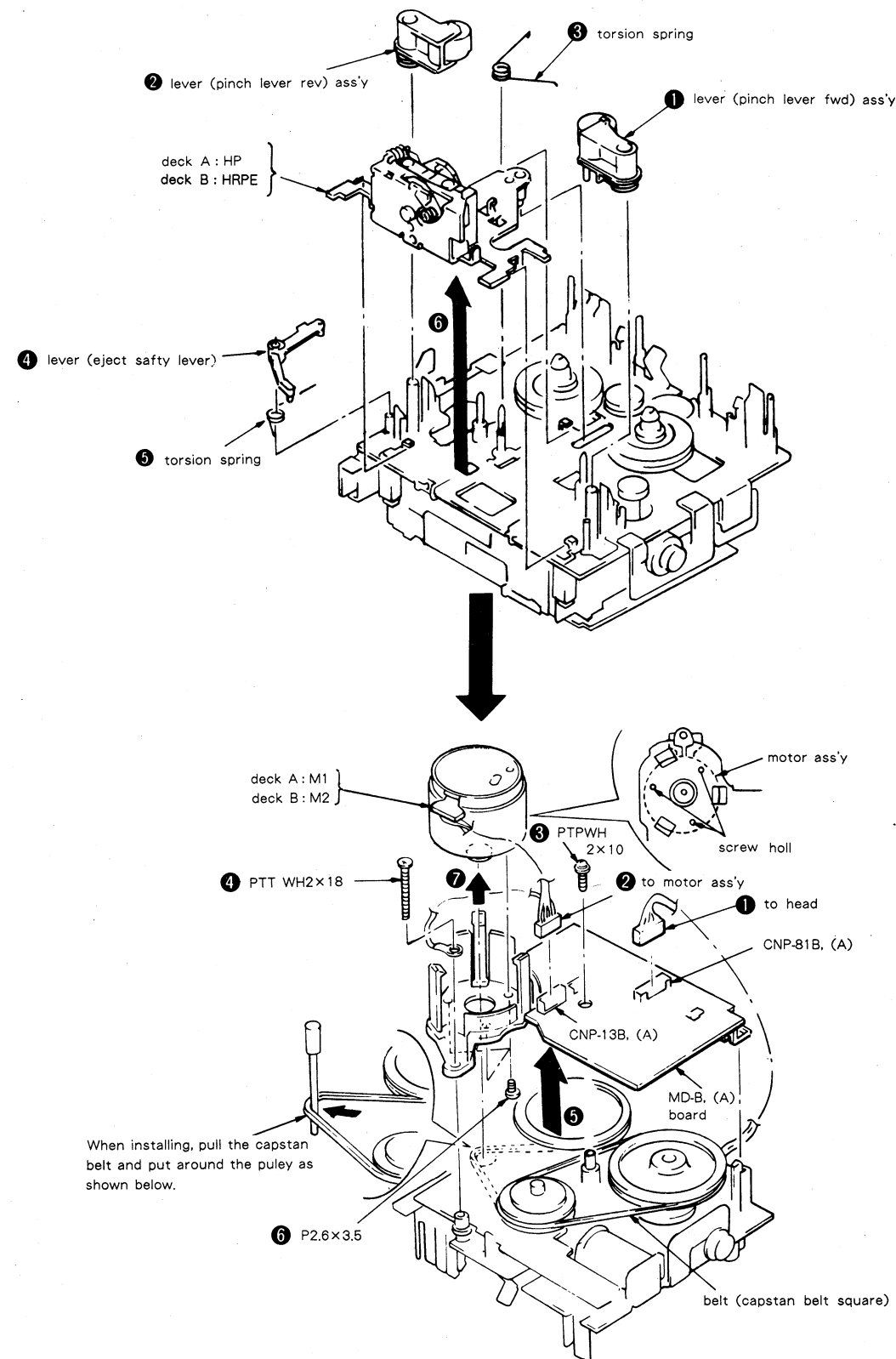
Connection for synchronized operation with a turntable system



SECTION 2

DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.



SECTION 3

ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

PRECAUTION

- Clean the following parts with a denatured-alcohol-moistened swab :
record/playback head pinch roller
erase head rubber belts
capstan idler
- Demagnetize the record/playback head with a head demagnetizer.
- Do not use a magnetized screwdriver for the adjustments.
- After the adjustments, apply suitable locking compound to the parts adjusted.

Torque Measurement

Torque	Torque meter	Meter reading
FWD	CQ-102C	27 to 75g · cm (0.40 to 1.13 oz · inch)
FWD Back tension	CQ-102C	1 to 10g · cm (0.015 to 0.15 oz · inch)
REV	CQ-102RC	27 to 75g · cm (0.40 to 1.13 oz · inch)
REV Back tension	CQ-102RC	1 to 10g · cm (0.015 to 0.15 oz · inch)
FF, REW	CQ-201B	95 to 165g · cm (1.43 to 2.48 oz · inch)

3-2. ELECTRICAL ADJUSTMENTS

Note : The adjustment should be performed in the order given in the service manual.
The adjustments should be performed for both L-CH and R-CH.

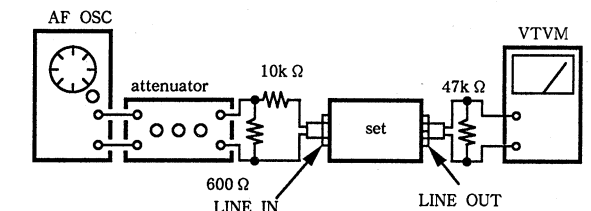
- Switches and controls should be set as follows unless otherwise specified.

DOLBY NR switch : OFF
TAPE SELECT switch : TYPE I
DIRECTION switch :
TIMER switch : OFF

- Standard Record :

Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

— Record Mode —



Standard Input Level

	LINE IN
source impedance	10k Ω
input level	0.25V (−10dB)

Standard Output Level

	LINE OUT
load impedance	47k Ω
output level	0.44V (−5dB)

- Test tape

Type	Signal	Used for
P-4-A100	10kHz, −10dB	Azimuth Adjustment
P-4-L300	315Hz, 0dB	PB LEVEL Adjustment
WS-48B	3kHz, 0dB	Tape Speed Adjustment

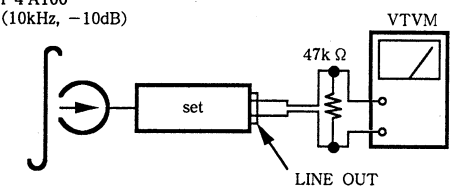
Record/Playback Head Azimuth Adjustment

DECK A **DECK B**

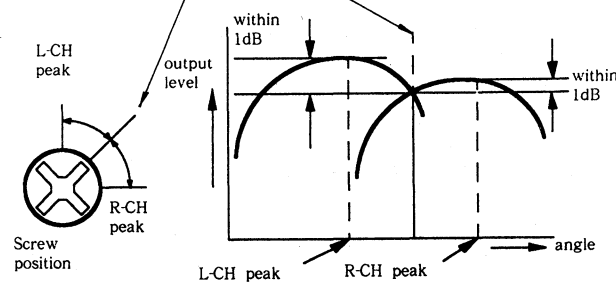
Procedure :

- Mode : FWD playback

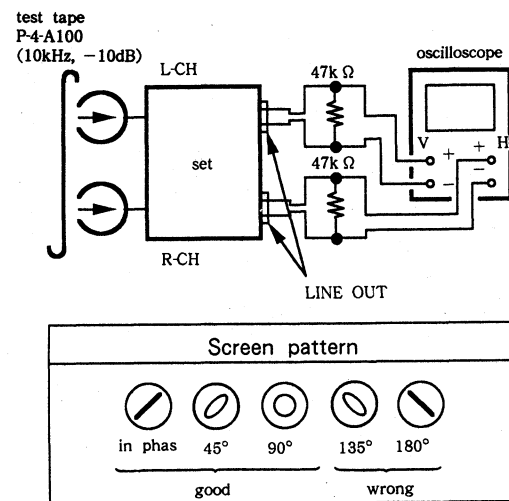
test tape
P-4-A100
(10kHz, −10dB)



2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1dB.

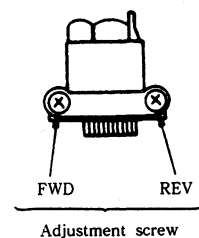


3. Phase Check
Mode : playback



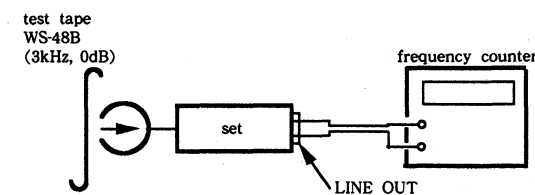
4. Set in the REW mode and repeat the step 1-3.
5. After the adjustment, lock the screws with locking compound.

Adjustment Location : Record/Playback head



Tape Speed Adjustment DECK A DECK B

Procedure :
Mode : FWD playback



Perform high speed adjustment before normal speed adjustment

Play back the test tape WS-48B and adjust to meet the specifications below.

Specifications :

speed	deck	Adjustment part	variable resistor of motor	test pin CN701	frequency counter reading
high	A	M1	(H)	short	5,920±60Hz
	B	M2	(H)		
normal	A	M1	(L)	open	2,960±30Hz
	B	M2	(L)		

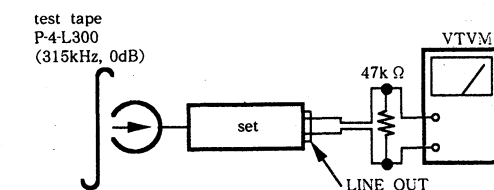
Frequency difference between the beginning and the end of the tape should be within 3%.
Frequency difference between deck A and deck B the beginning of the tape should be within 1.5%.

Adjustment Location :

deck A : motor (M1) rear side
deck B : motor (M2) rear side

Playback Level Adjustment DECK A DECK B

Procedure :
Mode : playback



Adjust deck A : RV41A(L-CH), RV61A(R-CH) and deck B : RV41B(L-CH), RV61B(R-CH) so that the reading on VTVM meets the specification below.

Specification :

LINE OUT level : -5±0.8dB (0.4-0.48dB)

Level difference between channels : less than 0.5dB

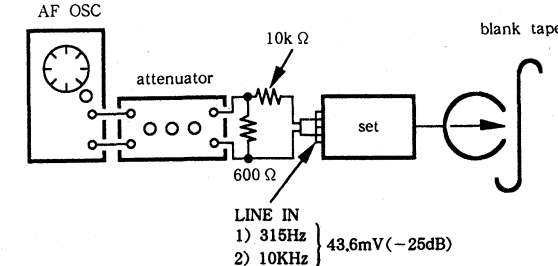
Check that the LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location : audio system control board

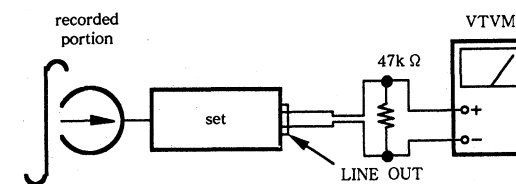
Record Bias Adjustment DECK B

Setting :
REC LEVEL control : standard record (See page 6.)

Procedure :
1. Mode : record



2. Mode : playback



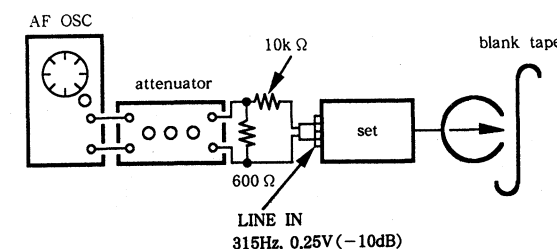
Confirm that the 10kHz playback output is 0±0.5dB relative to the 315Hz output. If necessary, adjust CT41(L-CH), CT61(R-CH) and repeat the steps given above.

Adjustment Location : MD-B board

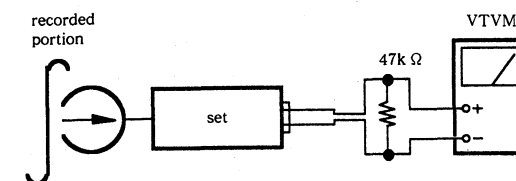
Record Level Adjustment DECK B

Setting :
REC LEVEL control : standard record (See page 6.)

Procedure :
1. Mode : record



2. Mode : playback



3. Play back the signal recorded in step 1.
Confirm that the signal level is within the specification below. If necessary, adjust RV101(L-CH), RV201(R-CH) and repeat the step1-3.

Specification : LINE OUT level : -5dB±0.8dB (0.4-0.48V)

Adjustment Location : audio system control board

Quick Reverse Sensitivity Adjustment DECK B

Conditions :

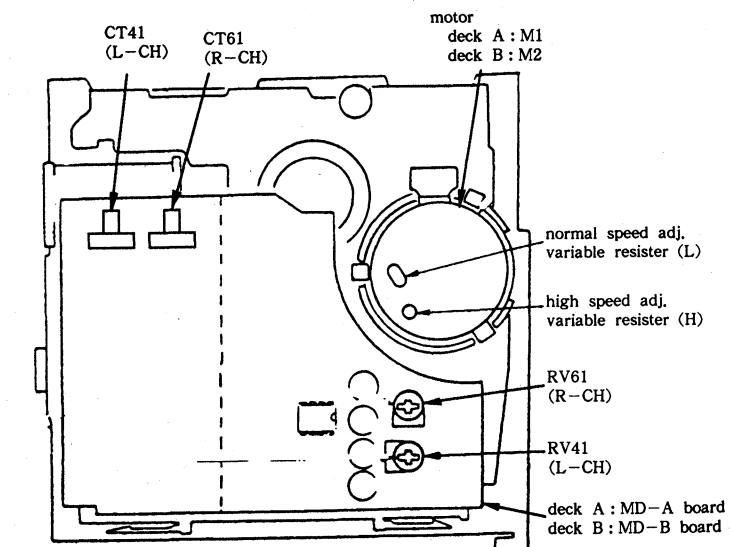
DIRECTION MODE switch : →

Adjustment Procedure :

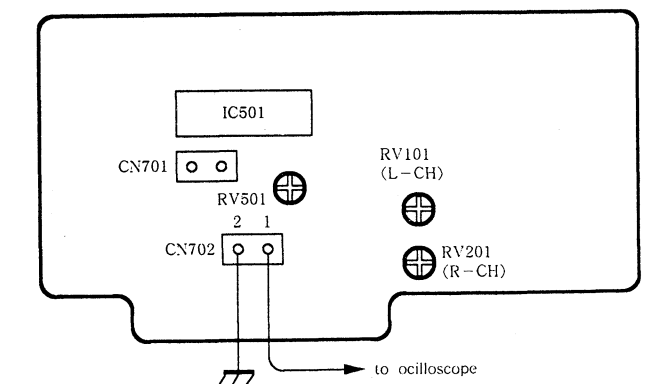
1. Connect the oscilloscope to test point CN702.
2. Load C-120 tape cassette and playback the leading portion in FWD mode.
3. Adjust the RV501 for 4.5±1V reading on the oscilloscope.
4. Play back C-120 tape cassette in FWD mode again.
5. Confirm that the reading on the oscilloscope is "L" level at the magnetic portion of the tape.
6. Confirm that the tape cassette stops around the tape end (border of the leading and the magnetic portions).

Adjustment Location : audio system control board

-Adjustment Parts Location Diagrams-

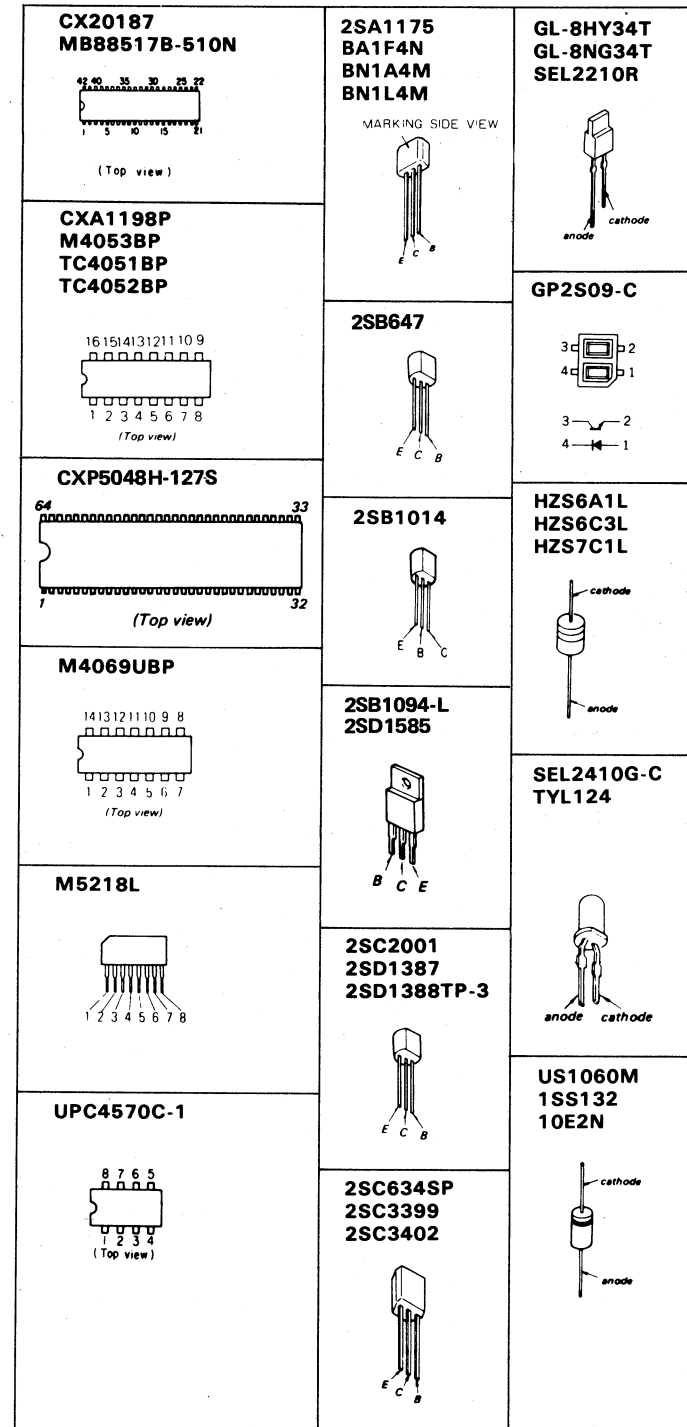


audio system control board



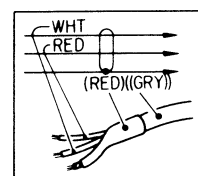
DIAGRAMS SECTION 4

4-1. SEMICONDUCTOR LEAD LAYOUT



Note on Printed Wiring Boards:

- Color code or sleeving over the end of the jacket.

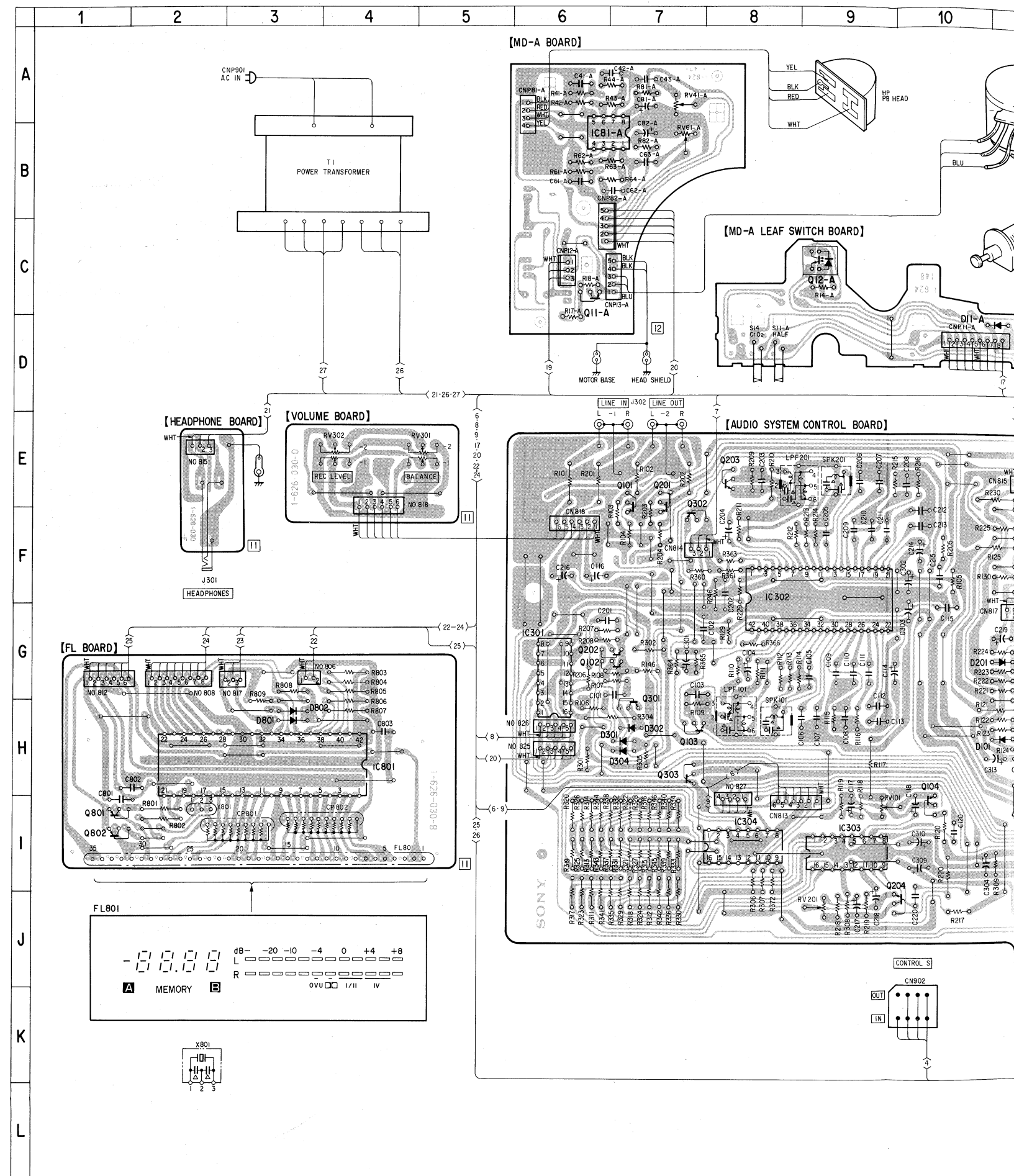


- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : indicates side identified with part number.
- : parts mounted on the conductor side.

SEMICONDUCTOR LOCATION

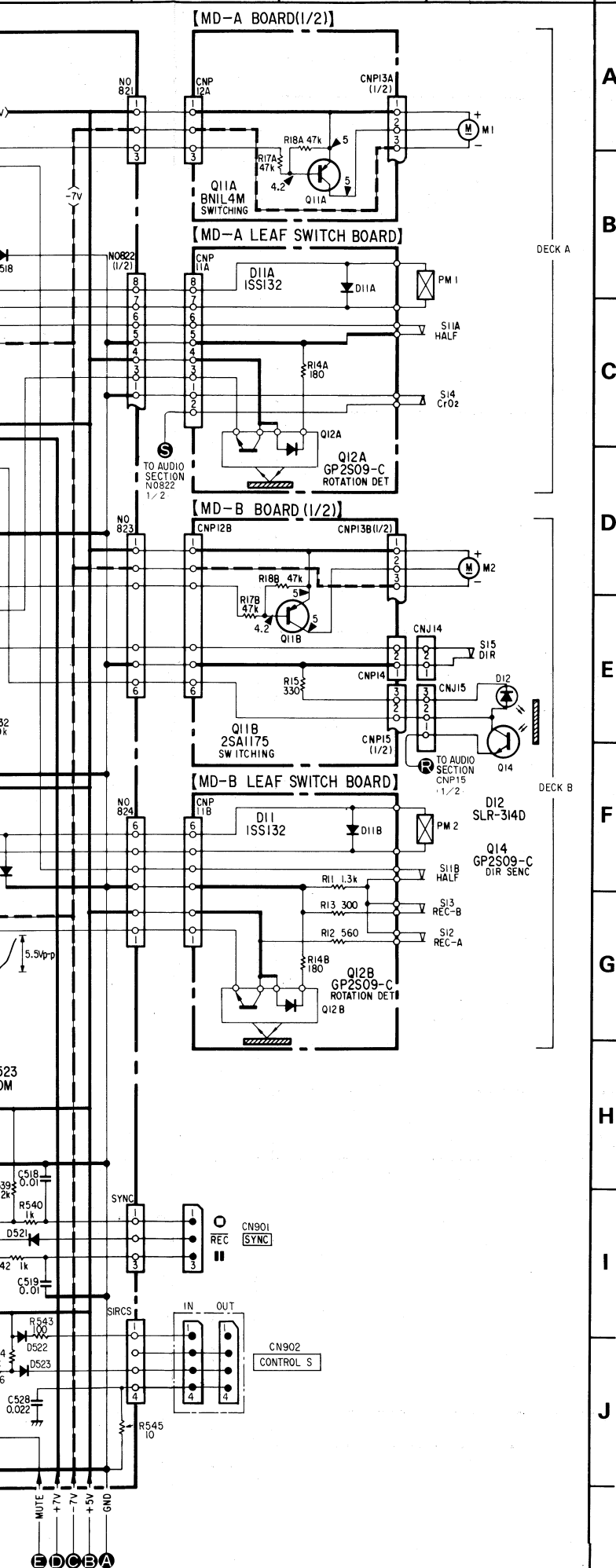
Ref. No.	Location	Ref. No.	Location
D11A	D-11	IC307	J-12
D11B	D-24	IC501	G-14
D12	A-22	IC502	F-12
D81	B-18	IC503	H-12
D101	H-11	IC801	H-3
D201	G-11	Q11A	C-6
D301	H-7	Q11B	C-19
D302	H-7	Q12A	C-9
D304	H-7	Q12B	C-22
D306	J-13	Q14	B-22
D501	F-18	Q81B	C-18
D502	F-18	Q82B	C-18
D503	E-18	Q83B	B-18
D504	E-18	Q101	E-7
D505	E-18	Q102	G-7
D506	E-18	Q103	H-7
D509	G-16	Q104	I-10
D510	H-17	Q201	E-7
D511	H-16	Q202	G-7
D512	G-16	Q203	E-8
D513	H-18	Q204	J-10
D514	I-17	Q301	H-7
D515	J-18	Q302	F-7
D516	J-18	Q303	H-7
D517	J-16	Q304	J-13
D518	I-12	Q305	J-13
D519	H-13	Q501	E-16
D520	I-14	Q502	G-16
D521	I-14	Q503	I-18
D522	I-15	Q504	I-17
D523	I-15		
D524	H-14	Q505	I-17
D525	G-15	Q506	H-16
D526	F-15	Q507	I-17
D527	B-14	Q508	I-17
D528	B-15	Q509	J-16
D529	B-14	Q510	J-16
D530	B-16	Q513	H-12
		Q514	H-13
D531	J-24	Q515	H-12
D532	J-21	Q516	I-13
D533	J-20		
D534	J-21	Q517	H-13
D535	J-23	Q518	I-14
		Q519	H-13
D536	J-25	Q520	I-13
D537	J-20	Q521	H-14
D538	J-22		
D539	J-17	Q522	H-14
D540	J-17	Q523	H-14
		Q524	H-15
		Q525	F-15
		Q526	F-15
D801	H-3	Q527	F-13
D802	H-3	Q528	F-14
D803	I-25	Q529	F-14
D804	J-25	Q530	F-14
D805	J-25	Q531	H-17
IC81A	B-6	Q801	I-1
IC81B	B-19	Q802	I-1
IC301	G-6		
IC302	F-9		
IC303	I-9		
IC304	I-8		
IC305	G-11		
IC306	F-11		

PRINTED WIRING BOARDS



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----





Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF : μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- \triangle : internal component.

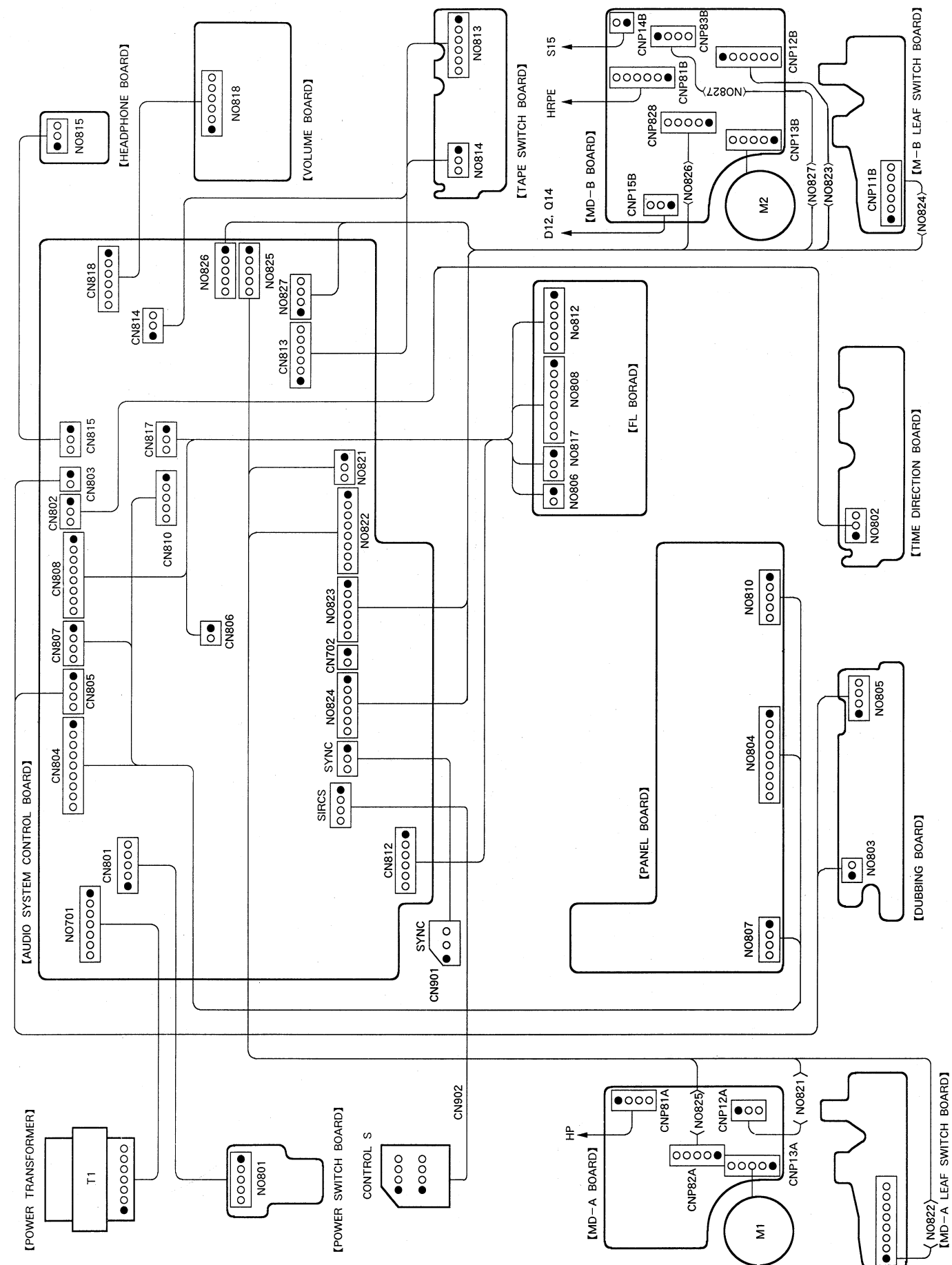
Note: The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

• Switch

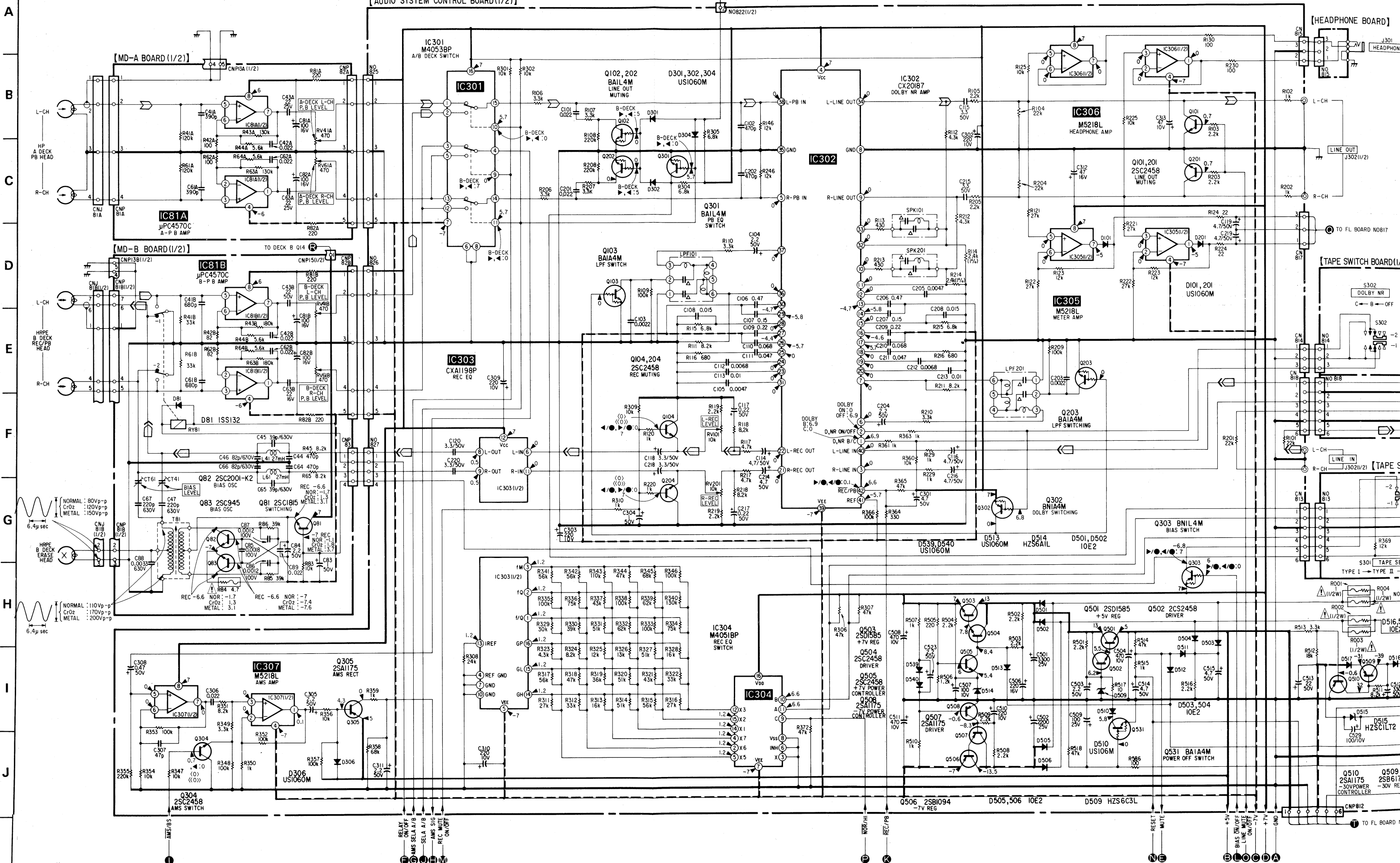
Ref. No.	Switch	Position
S11A(B)	HALF	OFF
S12	deck B REC-A	OFF
S13	deck B REC-B	OFF
S14	deck A CrO ₂	OFF
S15	deck B DIR	OFF
S502	TIMER	OFF
S503	DIRECTION	←→
S504	A-FWD	OFF
S505	A-REV	OFF
S506	A-STOP	OFF
S507	A-REW	OFF
S508	A-FF	OFF
S509	B-PAUSE	OFF
S510	B-FWD	OFF
S511	B-REV	OFF
S512	B-REC MUTE	OFF
S513	B-STOP	OFF
S514	B-REW	OFF
S515	B-FF	OFF
S516	B-REC	OFF
S517	AUTO PAUSE	OFF
S518	NOR SPEED	OFF
S519	HIGH SPEED	OFF
S520	AMS	OFF
S801	RESET	OFF
S802	MEMORY	OFF
S803	A/B	OFF

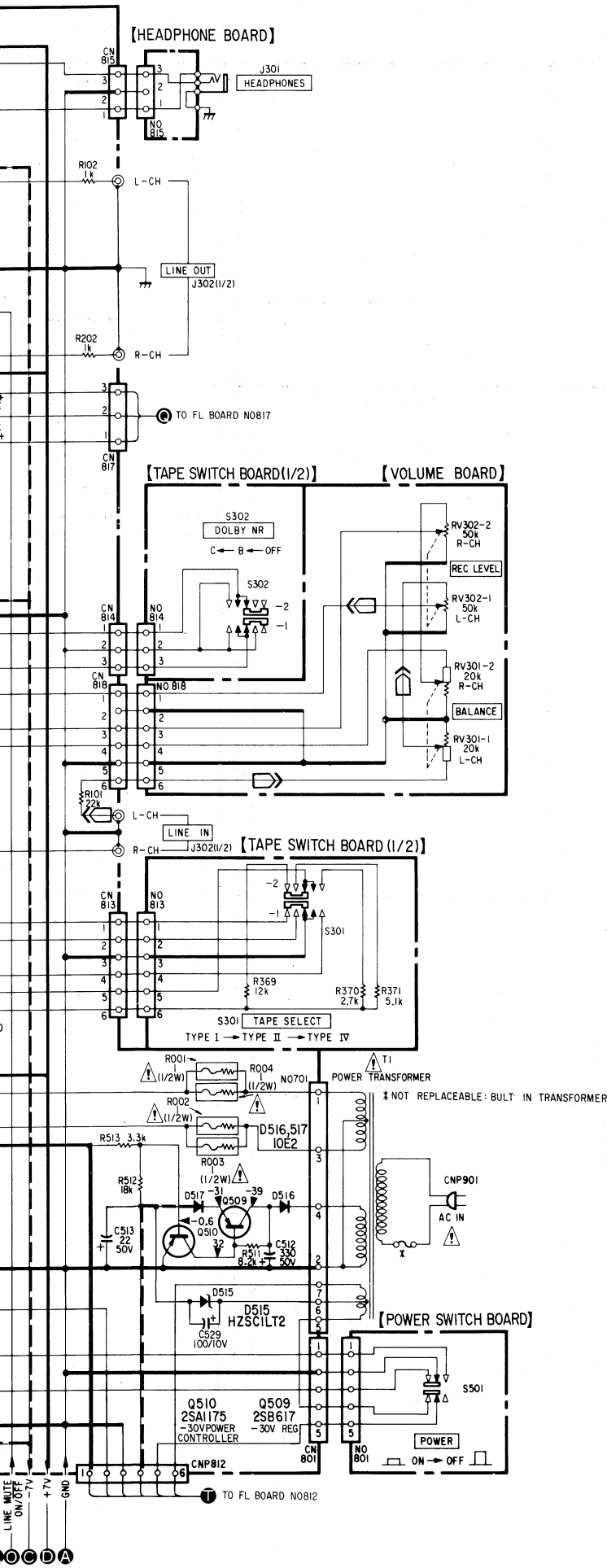
- --- : B+ Line
- --- : B- Line
- --- : adjustment for repair.
- AC voltage readings in the bias oscillator with a VTVM.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- no mark : STOP
- < > : NORMAL SPEED
- << >> : HIGH SPEED
- ▶ : FWD ◀ : REV ■ : STOP
- ▶▶ : FF ◀◀ : REW ● : REC
- Voltages are taken with a VOM (50 k Ω /V). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.

FRAME SCHEMATIC DIAGRAM



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----





A
B
C
D
E
F
G
H
I
J

Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. $pF: \mu\mu F$
- 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}W$ or less unless otherwise specified.
- % : indicates tolerance.
- Δ : internal component.
- $\text{---}\text{---}\text{---}$: fusible resistor.

Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

• Switch

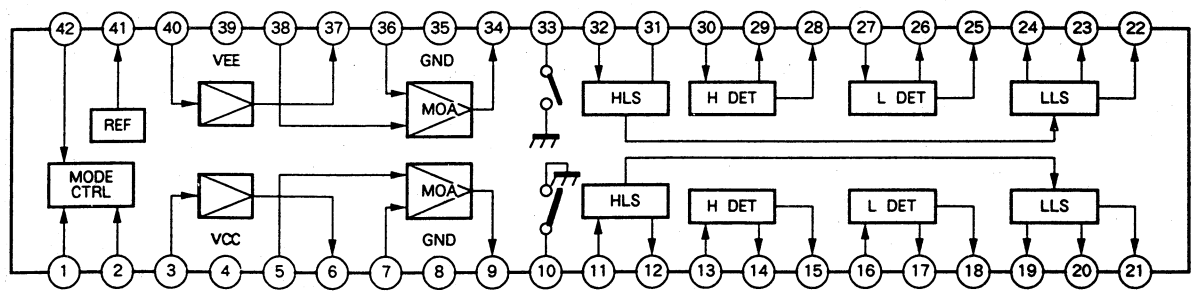
Ref. No.	Switch	Position
S301	TAPE SELECT	I
S302	DOLBY NR	OFF
S501	POWER	ON

- --- : B+ Line
- --- : B- Line
- --- : adjustment for repair.
- AC voltage readings in the bias oscillator with a VTVM.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- no mark : STOP
- < > : NORMAL SPEED
- << >> : HIGH SPEED
- ▶ : FWD ◀ : REV ■ : STOP
- ▶▶ : FF ◀◀ : REW ● : REC

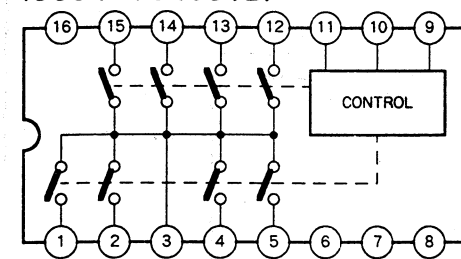
- Voltages are taken with a VOM (50 $k\Omega/V$). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Signal path.
 - ▷ : PB (DECK A)
 - ◁ : PB (DECK B)
 - ▷◁ : REC (DECK B)

4-5. IC BLOCK DIAGRAMS

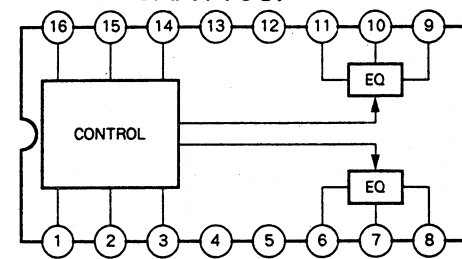
IC302 CX-20187



IC304 TC4051BP



IC303 CXA1198P



SECTION 5 EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

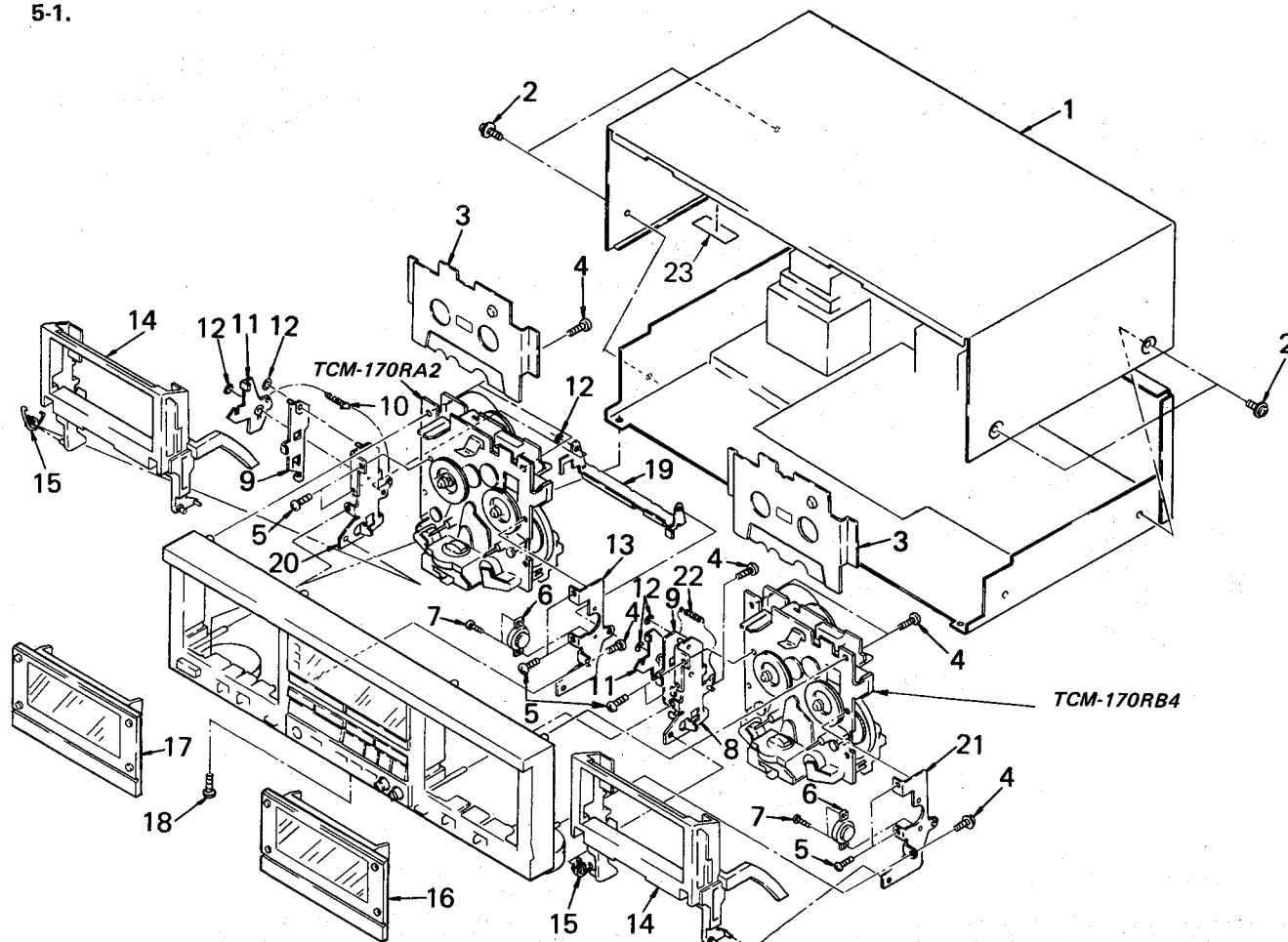
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
Example:
(RED) ... KNOB, BALANCE (WHITE)

↑
Cabinet's Color

↑
Parts Color

The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

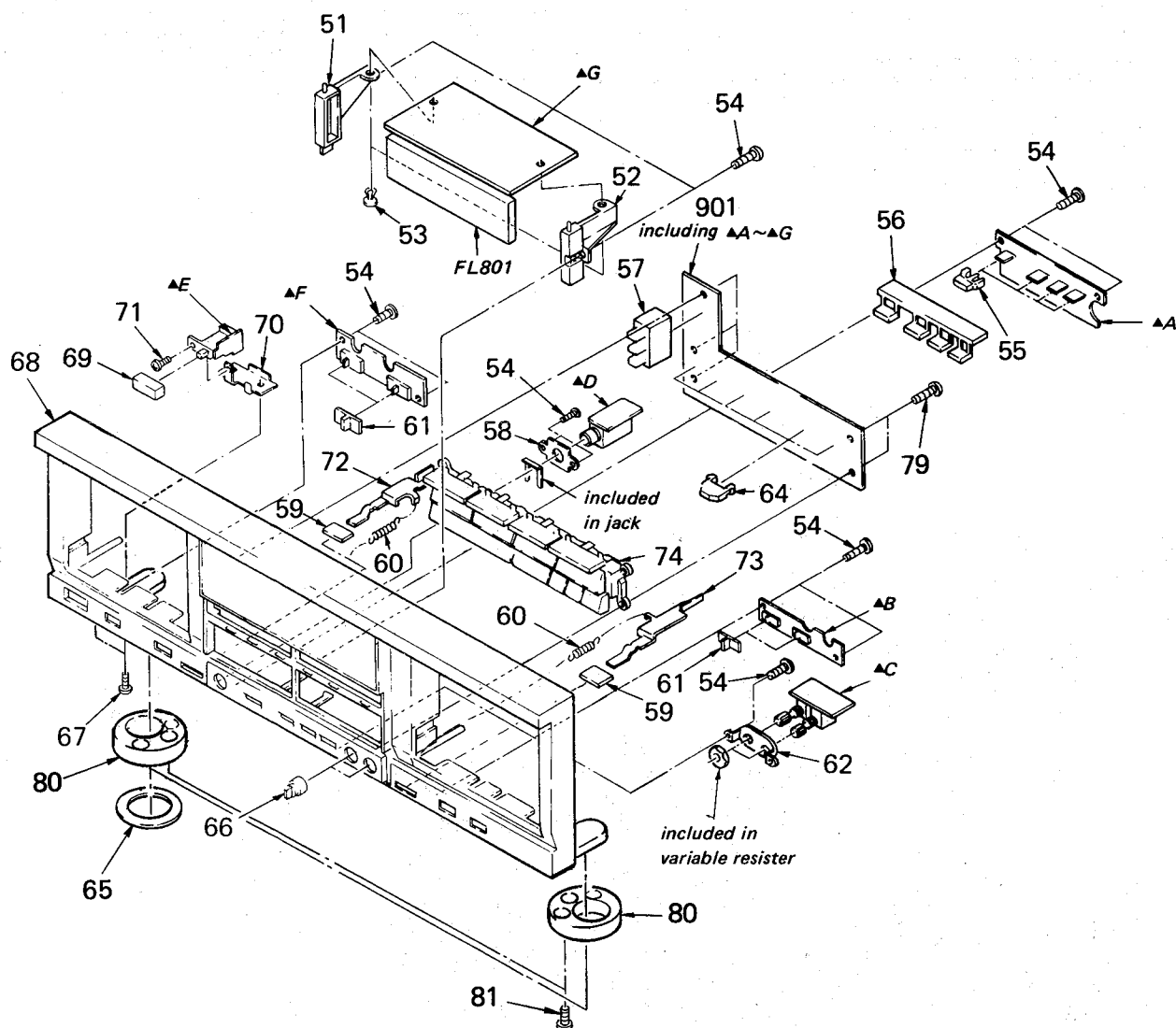
5-1.



No.	Part No.	Description	Remarks
1	3-327-856-31	CASE	
2	3-704-366-01	SCREW (CASE) (M3X8)	
3	*3-340-123-01	RETAINER, CASSETTE	
4	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
5	7-621-773-86	SCREW +BVTT 2.6X4 (S)	
6	3-319-224-31	DAMPER, SMALL	
7	7-621-255-15	SCREW +P 2X3	
8	*X-3332-487-1	BRACKET ASSY (B)	
9	*3-346-306-01	LEVER (EJECT)	
10	3-343-474-01	SPRING, TENSION	
11	*3-343-449-01	LEVER (LOCK LEVER)	
12	3-558-708-21	WASHER, STOPPER	

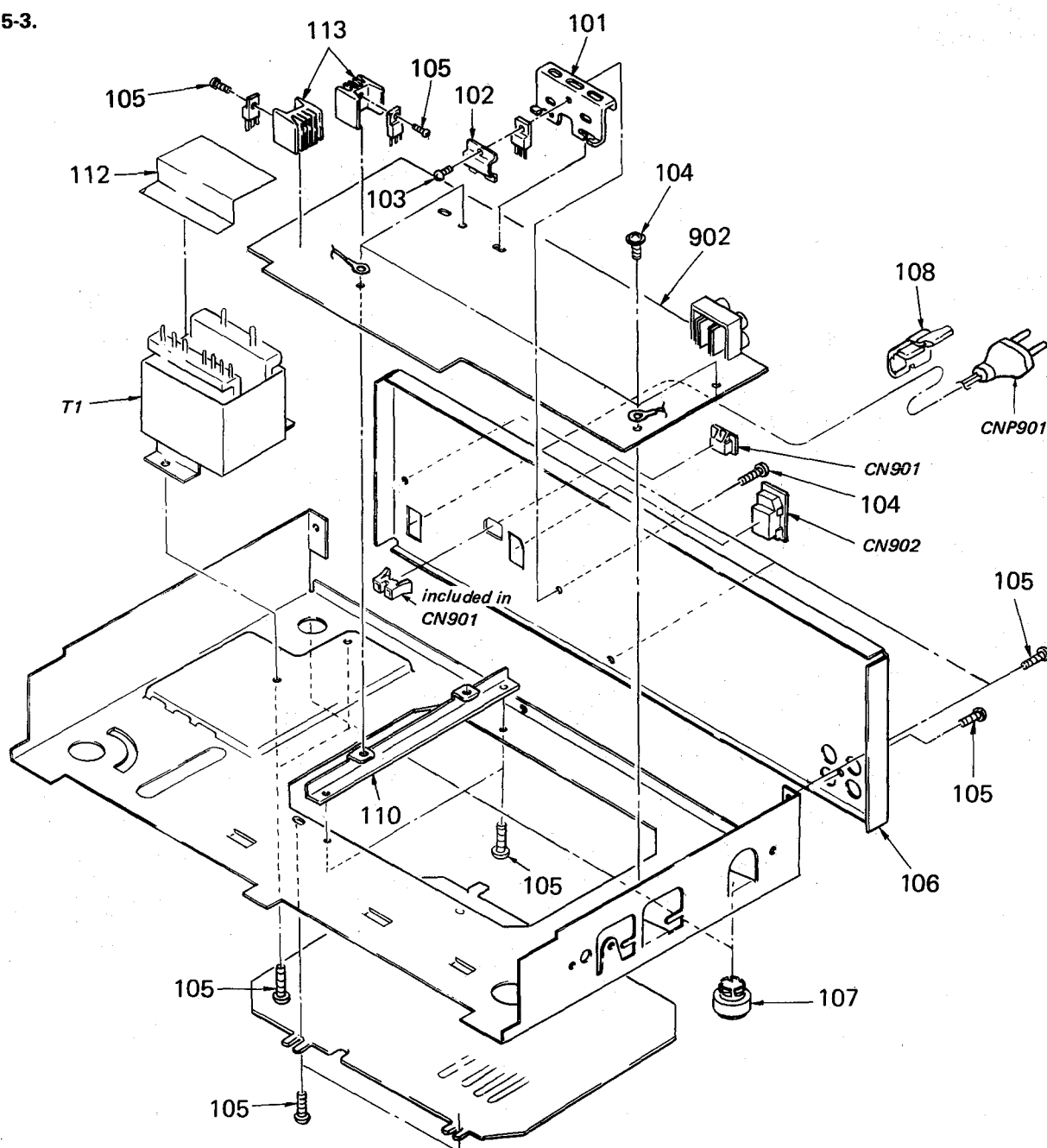
No.	Part No.	Description	Remarks
13	X-3332-485-1	BRACET ASSY (DAMPER)	
14	X-3332-482-1	HOLDER ASSY, CASSETTE	
15	3-346-336-01	SPRING, TORSION	
16	X-3332-484-1	LID (B) ASSY, CASSETTE	
17	X-3332-483-1	LID (A) ASSY, CASSETTE	
18	7-682-548-04	SCREW +BVTT 3X8 (S)	
19	*3-346-307-01	JOINT	
20	*X-3332-486-1	BRACKET ASSY (A)	
21	*3-346-305-01	BRACKET (DAMPER)	
22	3-312-432-00	SPRING, TENSION	
23	3-831-441-XX	CUSHION (B), CABINET	

5-2.





No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
51	*3-343-608-01	HOLDER (LEFT), FL TUBE		69	3-340-168-01	BUTTON (POWER SW)	
52	*3-343-607-01	HOLDER (RIGHT), FL TUBE		70	*3-340-178-01	BRACKET (POWER SW)	
53	4-812-134-00	RIVET NYLON, 3.5		71	7-621-255-15	SCREW +P 2X3	
54	7-685-133-19	SCREW +BTP 2.6X6 TYPE2 N-S		72	*3-340-193-01	SLIDER (EJECT LEFT)	
55	*3-337-108-01	HOLDER, LED		73	*3-340-194-01	SLIDER (EJECT RIGHT)	
56	*3-346-308-01	BUTTON (DUBBING)		74	X-3332-481-1	BUTTON ASSY, CONTROL	
57	3-346-309-01	BUTTON (CUNTER)		79	7-685-135-19	SCREW +BTP 2.6X10 TYPE2 N-S	
58	*3-346-303-01	BRACKET (HEADPHONE)		80	3-332-580-01	(AEP model).....COVER(FOOT)	
59	3-340-188-01	BUTTON (EJECT)			3-332-580-11	(West Germany model)....COVER(FOOT)	
60	4-885-182-11	SPRING, TENSION		81	7-682-548-04	SCREW +BVTT 3X8(S)	
61	3-323-415-41	KNOB, SWITCH TIMER		901	*1-626-030-11	PC BOARD, PANEL	
62	*3-340-196-01	BRACKET (VOLUME)					
64	*3-346-339-01	HOLDER					
65	3-337-121-01	FELT, ORNAMENTAL FOOT					
66	3-304-929-11	KNOB, HEADPHONE					
67	7-621-775-10	SCREW +B 2.6X4					
68	X-3332-490-1	PANEL ASSY, FRONT					

5-3.



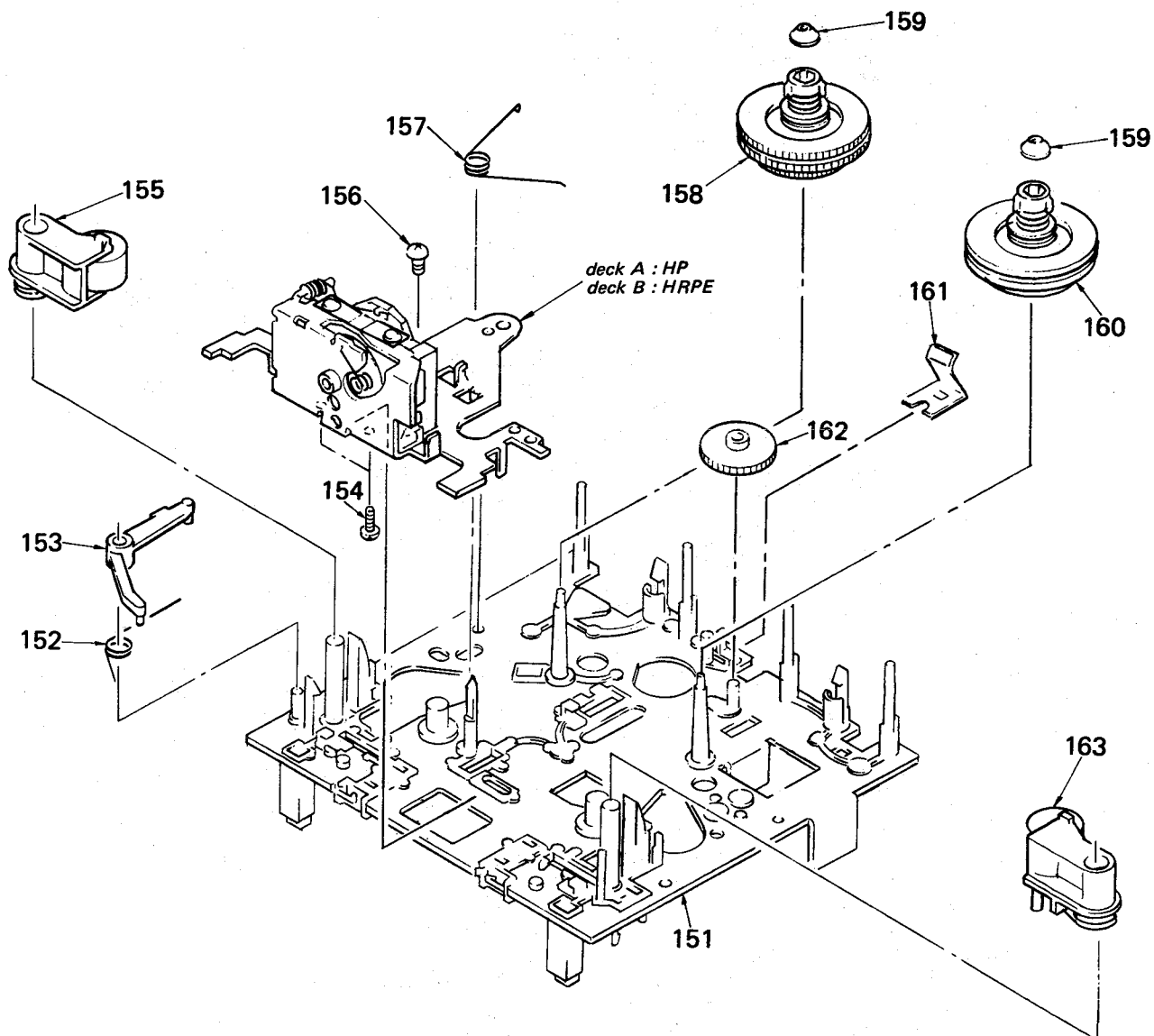
No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
101	*3-346-338-01	HEAT SINK		110	*3-346-343-01	BRACKET (PCB)	
102	*3-346-337-01	HOLDER (TR)		112	*3-337-136-01	COVER, TRANSFORMER SAFETY	
103	4-886-821-11	SCREW, S TIGHT, +PTTWH 3X6		113	*4-363-146-21	HEAT SINK, V.OUT	
104	7-621-849-00	SCREW, TAPPING		902	*A-2056-408-A	MOUNTED PCB, SYSTEM CONTROL	
105	7-682-548-04	SCREW +BVTT 3X8 (S)		CN901	*1-558-520-11	CORD (WITH CONNECTOR) SYNCHRO	
106	3-346-320-21	PANEL, BACK		CN902	*1-559-135-41	CORD (WITH CONNECTOR) CONTROL S	
107	X-4864-303-0	FOOT ASSY		CNP901	*1-555-795-00	CORD, POWER, EULO PLUG	
108	*3-703-244-00	BUSHING (2104), CORD		T1	*1-449-223-11	TRANSFORMER, POWER	

Note: The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

5-4.

DECK A: TCM-170RA2

DECK B: TCM-170RB4

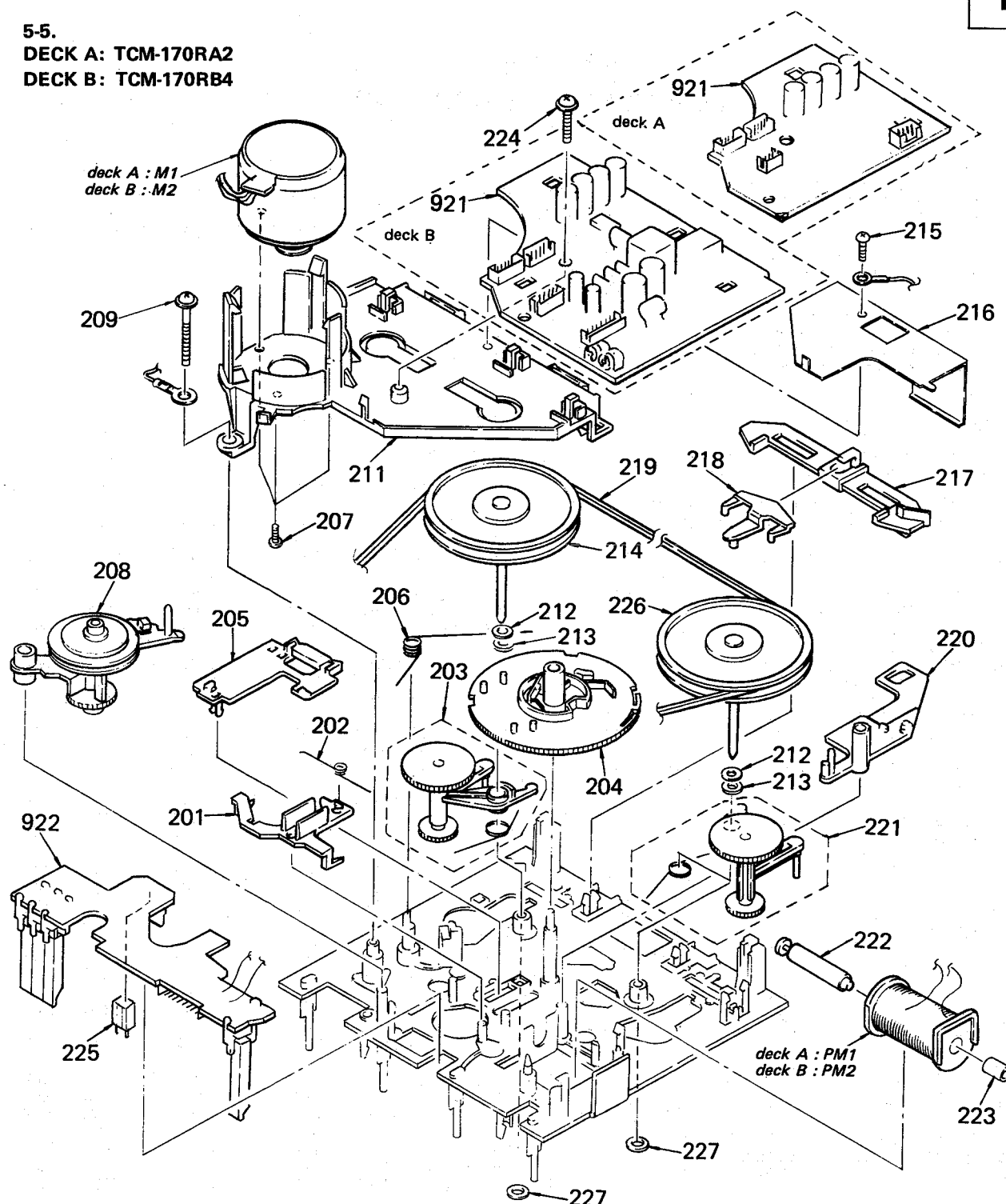


No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
151	*X-3343-418-5	CHASSIS ASSY, MECHANICAL		159	3-343-439-01	CAP (REEL TABLE)	
152	3-343-477-01	SPRING, TORSION (EJECT SAFTY)		160	X-3343-401-1	TABEL ASSY, REEL	
153	*3-343-476-03	LEVER (EJECT SAFETY LEVER)		161	3-343-420-01	SPRING, LEAF	
154	7-685-104-19	SCREW +P 2×6 TYPE2 NON-SLIT		162	3-343-411-01	GEAR (FF GEAR)	
155	X-3343-403-1	LEVER (PINCH LEVER REV) ASSY		163	X-3343-402-1	LEVER (PINCH LEVER FWD) ASSY	
156	7-621-773-86	SCREW +PVT 2.6X4 (S)		HP	A-2108-122-A	CHASSIS ASSY, HEAD	
157	3-343-401-01	SPRING, TORSION		HRPE	A-2108-043-A	CHASSIS ASSY, HEAD	
158	X-3343-415-1	TABEL (REV) ASSY, REEL					

5-5.

DECK A: TCM-170RA2

DECK B: TCM-170RB4



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
201	3-343-453-01	SLIDER (BRAKE PLATE)		219	3-343-426-01	BELT (CAPSTAN BELT SQUARE)	
202	3-343-429-01	SPRING, TORSION		220	*3-343-456-01	LEVER (PM LEVER)	
203	X-3343-406-1	LEVER (TU ARM REV) ASSY		221	X-3343-405-1	LEVER (TU ARM FWD) ASSY	
204	3-343-470-01	GEAR (CAM GEAR)		222	*3-343-425-01	ARBOR (MOVABLE IRON ARBOR), IRON	
205	*3-343-461-01	SLIDER		223	*3-343-424-01	ARBOR (FIXED IRON ARBOR), IRON	
206	3-343-430-01	SPRING, TORSION		224	3-343-404-01	SCREW (PTPWH 2X10)	
207	7-627-556-28	SCREW +P 2.6X3.5		225	*3-343-419-01	HOLDER (S SENSER A)	
208	X-3343-414-1	LAVER (FR ARM) ASSY		226	X-3343-416-1	FLYWHEEL (REV) COMPLETE ASSY	
209	3-343-403-01	SCREW (PTTWH 2X18)		227	3-343-473-01	WASHER, NYLON	
211	*X-3343-407-1	BASE (THRUST RETAINER) ASSY		921	*A-2010-267-A 1-624-147-11	(DECK B)...MOUNTED PCB, MD (B) (DECK A)...PC BOARD, MD (A)	
212	4-605-835-11	WASHER (2.6), POLYSLIDER		922	*1-624-148-11	PC BOARD, LEAF SW	
213	3-307-482-00	WASHER, LUMILER		M1	X-3343-408-1	MOTOR ASSY	
214	X-3343-411-1	FLYWHEEL COMPLETE ASSY		M2	X-3343-408-1	MOTOR ASSY	
215	7-685-102-19	SCREW +P 2X4 NON-SLIT TYPE 2		PM1	1-454-456-11	SOLENOID, PLUNGER	
216	*3-343-480-01	PLATE, SHIELD		PM2	1-454-456-11	SOLENOID, PLUNGER	
217	*3-343-457-01	SLIDER (REVERSE SLIDER)					
218	3-343-462-01	LEVER					

SECTION 6

ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:MF: μ F, PF: μ F.**RESISTORS**

- All resistors are in ohms.
- F: nonflammable

COILS

- MMH: mH, UH: μ H



SEMICONDUCTORSIn each case, U: μ , for example:UA....: μ A...., UPA....: μ PA....,UPC....: μ PC, UPD....: μ PD...

The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description					Ref.No.	Part No.	Description				
901	*1-626-030-11	PC BOARD, PANEL					C116	1-124-927-11	ELECT	4.7MF	20%	50V	
902	*A-2056-408-A	MOUNTED PCB, SYSTEM CONTROL					C117	1-124-464-11	ELECT	0.22MF	20%	50V	
921	*A-2010-267-A	(DECK B)...MOUNTED PCB, MD (B)					C118	1-123-382-00	ELECT	3.3MF	20%	50V	
	1-624-147-11	(DECK A)...PC BOARD, MD (A)					C119	1-124-927-11	ELECT	4.7MF	20%	50V	
922	*1-624-148-11	PC BOARD, LEAF SW					C120	1-124-273-00	ELECT	3.3MF	20%	50V	
C41A	1-162-289-31	CERAMIC	390PF	10%	50V		C201	1-136-157-00	FILM	0.022MF	5%	50V	
C41B	1-130-469-00	MYLAR	680PF	5%	50V		C202	1-162-290-31	CERAMIC	470PF	10%	50V	
C42	1-136-157-00	FILM	0.022MF	5%	50V		C203	1-161-375-00	CERAMIC	0.0022MF	30%	16V	
C43	1-124-282-00	ELECT	22MF	20%	25V		C204	1-124-925-11	ELECT	2.2MF	20%	50V	
C44B	1-162-290-31	CERAMIC	470PF	10%	50V		C205	1-130-479-00	MYLAR	0.0047MF	5%	50V	
C45B	1-136-440-11	FILM	39PF	5%	630V		C206	1-136-173-00	FILM	0.47MF	5%	50V	
C46B	1-136-440-11	FILM	39PF	5%	630V		C207	1-136-167-00	FILM	0.15MF	5%	50V	
C61A	1-162-289-31	CERAMIC	390PF	10%	50V		C208	1-136-155-00	FILM	0.015MF	5%	50V	
C61B	1-130-469-00	MYLAR	680PF	5%	50V		C209	1-136-169-00	FILM	0.22MF	5%	50V	
C62	1-136-157-00	FILM	0.022MF	5%	50V		C210	1-136-163-00	FILM	0.068MF	5%	50V	
C63	1-124-282-00	ELECT	22MF	20%	25V		C211	1-136-161-00	FILM	0.047MF	5%	50V	
C64B	1-162-290-31	CERAMIC	470PF	10%	50V		C212	1-130-481-00	MYLAR	0.0068MF	5%	50V	
C47	1-136-437-11	FILM	220MF	5%	630V		C213	1-136-153-00	FILM	0.01MF	5%	50V	
C65B	1-136-440-11	FILM	39PF	5%	630V		C214	1-124-927-11	ELECT	4.7MF	20%	50V	
C66B	1-136-440-11	FILM	39PF	5%	630V		C215	1-124-273-00	ELECT	3.3MF	20%	50V	
C67	1-136-437-11	FILM	220MF	5%	630V		C216	1-124-927-11	ELECT	4.7MF	20%	50V	
C81	1-126-101-11	ELECT	100MF	20%	16V		C217	1-124-464-11	ELECT	0.22MF	20%	50V	
C82	1-126-101-11	ELECT	100MF	20%	16V		C218	1-123-382-00	ELECT	3.3MF	20%	50V	
C83B	1-124-499-11	ELECT	1MF	20%	50V		C219	1-124-927-11	ELECT	4.7MF	20%	50V	
C84B	1-124-925-11	ELECT	2.2MF	20%	50V		C220	1-124-273-00	ELECT	3.3MF	20%	50V	
C85B	1-130-279-00	FILM	0.0018MF	5%	100V		C301	1-124-927-11	ELECT	4.7MF	20%	50V	
C86B	1-136-228-11	FILM	0.0012MF	5%	100V		C302	1-126-176-11	ELECT	220MF	20%	10V	
C87B	1-136-228-11	FILM	0.0012MF	5%	100V		C303	1-126-176-11	ELECT	220MF	20%	10V	
C88B	1-136-557-11	FILM	0.0033MF	5%	630V		C304	1-124-499-11	ELECT	1MF	20%	50V	
C89B	1-161-494-00	CERAMIC	0.022MF	25V			C305	1-124-925-11	ELECT	2.2MF	20%	50V	
C90B	1-126-101-11	ELECT	100MF	20%	16V		C306	1-136-157-00	FILM	0.022MF	5%	50V	
C101	1-136-157-00	FILM	0.022MF	5%	50V		C307	1-162-215-31	CERAMIC	47PF	5%	50V	
C102	1-162-290-31	CERAMIC	470PF	10%	50V		C308	1-124-902-00	ELECT	0.47MF	20%	50V	
C103	1-161-375-00	CERAMIC	0.0022MF	30%	16V		C309	1-126-176-11	ELECT	220MF	20%	10V	
C104	1-124-925-11	ELECT	2.2MF	20%	50V		C310	1-126-176-11	ELECT	220MF	20%	10V	
C105	1-130-479-00	MYLAR	0.0047MF	5%	50V		C311	1-124-925-11	ELECT	2.2MF	20%	50V	
C106	1-136-173-00	FILM	0.47MF	5%	50V		C312	1-124-477-11	ELECT	47MF	20%	16V	
C107	1-136-167-00	FILM	0.15MF	5%	50V		C313	1-124-477-11	ELECT	47MF	20%	16V	
C108	1-136-155-00	FILM	0.015MF	5%	50V		C501	1-124-636-00	ELECT	3300MF	20%	25V	
C109	1-136-169-00	FILM	0.22MF	5%	50V		C502	1-124-563-11	ELECT	2200MF	20%	25V	
C110	1-136-163-00	FILM	0.068MF	5%	50V		C503	1-124-925-11	ELECT	2.2MF	20%	50V	
C111	1-136-161-00	FILM	0.047MF	5%	50V		C504	1-124-472-11	ELECT	470MF	20%	10V	
C112	1-130-481-00	MYLAR	0.0068MF	5%	50V		C506	1-124-120-11	ELECT	220MF	20%	16V	
C113	1-136-153-00	FILM	0.01MF	5%	50V		C507	1-124-443-00	ELECT	100MF	20%	10V	
C114	1-124-927-11	ELECT	4.7MF	20%	50V		C508	1-124-472-11	ELECT	470MF	20%	10V	
C115	1-124-273-00	ELECT	3.3MF	20%	50V								

Ref.No.	Part No.	Description			
C509	1-124-478-11	ELECT	100MF	20%	25V
C510	1-124-120-11	ELECT	220MF	20%	16V
C511	1-124-472-11	ELECT	470MF	20%	10V
C512	1-124-912-11	ELECT	330MF	20%	50V
C513	1-124-908-11	ELECT	22MF	20%	50V
C514	1-124-927-11	ELECT	4.7MF	20%	50V
C515	1-124-927-11	ELECT	4.7MF	20%	50V
C516	1-124-477-11	ELECT	47MF	20%	16V
C517	1-124-927-11	ELECT	4.7MF	20%	50V
C518	1-161-379-00	CERAMIC	0.01MF	30%	16V
C519	1-161-379-00	CERAMIC	0.01MF	30%	16V
C520	1-162-294-31	CERAMIC	0.001MF	10%	50V
C521	1-124-925-11	ELECT	2.2MF	20%	50V
C522	1-161-494-00	CERAMIC	0.022MF		25V
C523	1-124-925-11	ELECT	2.2MF	20%	50V
C525	1-161-494-00	CERAMIC	0.022MF		25V
C526	1-161-377-00	CERAMIC	0.0047MF	30%	16V
C527	1-161-494-00	CERAMIC	0.022MF		25V
C528	1-161-494-00	CERAMIC	0.022MF		25V
C801	1-161-494-00	CERAMIC	0.022MF		25V
C802	1-161-494-00	CERAMIC	0.022MF		25V
C803	1-161-494-00	CERAMIC	0.022MF		25V
CN701	*1-564-505-11	PLUG, CONNECTOR 2P			
CN702	*1-564-505-21	PLUG, CONNECTOR 2P			
CN801	*1-564-339-61	PIN, CONNECTOR 5P			
CN802	*1-564-337-81	PIN, CONNECTOR 3P			
CN803	*1-564-336-51	PIN, CONNECTOR 2P			
CN804	*1-506-503-11	PIN, CONNECTOR 9P			
CN805	*1-564-338-61	PIN, CONNECTOR 4P			
CN806	*1-564-336-61	PIN, CONNECTOR 2P			
CN807	*1-564-338-51	PIN, CONNECTOR 4P			
CN808	*1-564-342-51	PIN, CONNECTOR 8P			
CN810	*1-564-339-51	PIN, CONNECTOR 5P			
CN812	*1-564-340-61	PIN, CONNECTOR 6P			
CN813	*1-564-340-51	PIN, CONNECTOR 6P			
CN814	*1-564-337-51	PIN, CONNECTOR 3P			
CN815	*1-564-337-71	PIN, CONNECTOR 3P			
CN817	*1-564-337-61	PIN, CONNECTOR 3P			
CN818	*1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P			
CN901	*1-558-520-11	CORD (WITH CONNECTOR) SYNCHRO			
CN902	*1-559-135-41	CORD (WITH CONNECTOR) CONTROL S			
CNP11B	*1-564-499-11	PIN, CONNECTOR 6P			
CNP11A	*1-564-501-11	PIN, CONNECTOR 8P			
CNP12A	*1-564-337-51	PIN, CONNECTOR 3P			
CNP12B	*1-564-340-71	PIN, CONNECTOR 6P			
CNP13B	*1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P			
CNP14B	*1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CNP15B	*1-564-506-11	PLUG, CONNECTOR 3P			
CNP81A	*1-564-706-31	PIN, CONNECTOR (SMALL TYPE) 4P			
CNP81B	*1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P			
CNP82	*1-564-339-51	PIN, CONNECTOR 5P			
CNP83B	*1-564-338-51	PIN, CONNECTOR 4P			
CNP901A	*1-555-795-00	CORD, POWER, EULO PLUG			
CP501	1-233-120-11	COMPOSITION CIRCUIT BLOCK			
CP502	1-233-119-11	COMPOSITION CIRCUIT BLOCK			
CP801	1-233-140-11	COMPOSITION CIRCUIT BLOCK			
CP802	1-233-141-11	COMPOSITION CIRCUIT BLOCK			

Ref.No.	Part No.	Description
CT41	1-141-391-11	CAP, TRIMMER
CT61	1-141-391-11	CAP, TRIMMER
D11	8-719-940-76	DIODE 1SS132
D12	8-719-950-74	DIODE SLR-314D
D81	8-719-940-76	DIODE 1SS132
D101	8-719-000-26	DIODE US1060M
D201	8-719-000-26	DIODE US1060M
D301	8-719-000-26	DIODE US1060M
D302	8-719-000-26	DIODE US1060M
D304	8-719-000-26	DIODE US1060M
D306	8-719-000-26	DIODE US1060M
D501	8-719-200-77	DIODE 10E2N
D502	8-719-200-77	DIODE 10E2N
D503	8-719-200-77	DIODE 10E2N
D504	8-719-200-77	DIODE 10E2N
D505	8-719-200-77	DIODE 10E2N
D506	8-719-200-77	DIODE 10E2N
D509	8-719-933-41	DIODE HZS6C3L
D510	8-719-000-26	DIODE US1060M
D511	8-719-000-26	DIODE US1060M
D512	8-719-000-26	DIODE US1060M
D513	8-719-000-26	DIODE US1060M
D514	8-719-933-33	DIODE HZS6A1L
D515	8-719-333-39	DIODE HZS7C1L
D516	8-719-200-77	DIODE 10E2N
D517	8-719-200-77	DIODE 10E2N
D518	8-719-200-77	DIODE 10E2N
D519	8-719-000-26	DIODE US1060M
D520	8-719-200-77	DIODE 10E2N
D521	8-719-000-26	DIODE US1060M
D522	8-719-000-26	DIODE US1060M
D523	8-719-000-26	DIODE US1060M
D524	8-719-000-26	DIODE US1060M
D525	8-719-000-26	DIODE US1060M
D526	8-719-000-26	DIODE US1060M
D527	8-719-948-79	DIODE GL8HD34T
D528	8-719-948-79	DIODE GL8HD34T
D529	8-719-948-81	DIODE GL8NG34T
D530	8-719-948-80	DIODE GL8HY34T
D531	8-719-303-00	DIODE SEL2510C-C
D532	8-719-303-84	DIODE SEL4914D-C
D533	8-719-300-71	DIODE SEL2210R-C
D534	8-719-303-00	DIODE SEL2510C-C
D535	8-719-812-42	DIODE TLY124
D536	8-719-812-42	DIODE TLY124
D537	8-719-812-42	DIODE TLY124
D538	8-719-812-42	DIODE TLY124
D539	8-719-000-26	DIODE US1060M
D540	8-719-000-26	DIODE US1060M
D801	8-719-000-26	DIODE US1060M
D802	8-719-000-26	DIODE US1060M
D803	8-719-000-26	DIODE US1060M
D804	8-719-000-26	DIODE US1060M
D805	8-719-000-26	DIODE US1060M
FL801	1-519-447-11	INDICATOR TUBE, FLUORESCENT
HP	A-2108-122-A	CHASSIS ASSY, HEAD

Note: The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

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Ref.No.	Part No.	Description
HRPE	A-2108-043-A	CHASSIS ASSY, HEAD
IC81	8-759-111-44	IC UPC4570C-1
IC301	8-759-601-41	IC M4053BP
IC302	8-752-018-70	IC CX20187
IC303	8-752-032-60	IC CXA1198P
IC304	8-759-240-51	IC TC4051BP
IC305	8-759-600-02	IC M5218L
IC306	8-759-600-02	IC M5218L
IC307	8-759-600-02	IC M5218L
IC501	8-752-804-34	IC CXP5048H-127S
IC502	8-759-240-52	IC TC4052BP
IC503	8-759-601-45	IC M4069UBP
IC801	8-759-971-72	IC MB88517B-510N
J301	1-507-796-21	JACK (HEADPHONES)
J302	1-565-258-11	JACK, PIN 4P (LINE IN/OUT)
L41	1-410-780-11	INDUCTOR 27MMH
L61	1-410-780-11	INDUCTOR 27MMH
LPF101	1-235-980-11	FILTER, LOW PASS
LPF201	1-235-980-11	FILTER, LOW PASS
M1	X-3343-408-1	MOTOR ASSY
M2	X-3343-408-1	MOTOR ASSY
PM1	1-454-456-11	SOLENOID, PLUNGER
PM2	1-454-456-11	SOLENOID, PLUNGER
Q11	8-729-117-54	TRANSISTOR 2SA1175
Q12	8-719-939-11	TRANSISTOR GP2S09-C
Q14B	8-719-809-43	TRANSISTOR SPS-314B
Q81B	8-729-801-93	TRANSISTOR 2SD1387
Q82B	8-729-100-13	TRANSISTOR 2SC2001
Q83B	8-729-100-13	TRANSISTOR 2SC2001
Q101	8-729-600-27	TRANSISTOR 2SC634SP
Q102	8-729-806-38	TRANSISTOR 2SC3399
Q103	8-729-806-28	TRANSISTOR 2SC3402
Q104	8-729-600-27	TRANSISTOR 2SC634SP
Q201	8-729-600-27	TRANSISTOR 2SC634SP
Q202	8-729-806-38	TRANSISTOR 2SC3399
Q203	8-729-806-28	TRANSISTOR 2SC3402
Q204	8-729-600-27	TRANSISTOR 2SC634SP
Q301	8-729-806-38	TRANSISTOR 2SC3399
Q302	8-729-115-15	TRANSISTOR BN1A4M
Q303	8-729-115-12	TRANSISTOR BN1L4M
Q304	8-729-600-27	TRANSISTOR 2SC634SP
Q305	8-729-117-54	TRANSISTOR 2SA1175
Q501	8-729-107-25	TRANSISTOR 2SD1585
Q502	8-729-600-27	TRANSISTOR 2SC634SP
Q503	8-729-107-25	TRANSISTOR 2SD1585
Q504	8-729-600-27	TRANSISTOR 2SC634SP
Q505	8-729-600-27	TRANSISTOR 2SC634SP
Q506	8-729-111-67	TRANSISTOR 2SB1094-L
Q507	8-729-117-54	TRANSISTOR 2SA1175
Q508	8-729-117-54	TRANSISTOR 2SA1175
Q509	8-729-364-72	TRANSISTOR 2SB647
Q510	8-729-117-54	TRANSISTOR 2SA1175
Q513	8-729-802-22	TRANSISTOR 2SB1014
Q514	8-729-115-15	TRANSISTOR BN1A4M
Q515	8-729-801-93	TRANSISTOR 2SD1387
Q516	8-729-600-27	TRANSISTOR 2SC634SP

Ref.No.	Part No.	Description
Q517	8-729-115-81	TRANSISTOR BA1F4N
Q518	8-729-802-22	TRANSISTOR 2SB1014
Q519	8-729-115-15	TRANSISTOR BN1A4M
Q520	8-729-801-93	TRANSISTOR 2SD1387
Q521	8-729-115-15	TRANSISTOR BN1A4M
Q522	8-729-115-12	TRANSISTOR BN1L4M
Q523	8-729-806-38	TRANSISTOR 2SC3399
Q524	8-729-115-12	TRANSISTOR BN1L4M
Q525	8-729-115-12	TRANSISTOR BN1L4M
Q526	8-729-115-12	TRANSISTOR BN1L4M
Q527	8-729-115-15	TRANSISTOR BN1A4M
Q528	8-729-115-15	TRANSISTOR BN1A4M
Q529	8-729-115-15	TRANSISTOR BN1A4M
Q530	8-729-115-15	TRANSISTOR BN1A4M
Q531	8-729-806-28	TRANSISTOR 2SC3402
Q801	8-729-117-54	TRANSISTOR 2SA1175
Q802	8-729-117-54	TRANSISTOR 2SA1175
R11A	1-247-834-11	CARBON 1.3K 5% 1/4W
R12B	1-249-414-11	CARBON 560 5% 1/4W
R13B	1-247-818-11	CARBON 300 5% 1/4W
R14	1-249-408-11	CARBON 180 5% 1/4W
R15B	1-249-413-11	CARBON 470 5% 1/4W
R17	1-249-437-11	CARBON 47K 5% 1/4W
R18	1-249-437-11	CARBON 47K 5% 1/4W
R41A	1-247-881-00	CARBON 120K 5% 1/4W
R41B	1-249-435-11	CARBON 33K 5% 1/4W
R42A	1-249-405-11	CARBON 100 5% 1/4W
R42B	1-249-404-00	CARBON 82 5% 1/4W
R43A	1-247-882-11	CARBON 130K 5% 1/4W
R43B	1-247-885-00	CARBON 180K 5% 1/4W
R44	1-249-426-11	CARBON 5.6K 5% 1/4W
R45B	1-249-428-11	CARBON 8.2K 5% 1/4W
R61A	1-247-881-00	CARBON 120K 5% 1/4W
R61B	1-249-435-11	CARBON 33K 5% 1/4W
R62A	1-249-405-11	CARBON 100 5% 1/4W
R62B	1-249-404-00	CARBON 82 5% 1/4W
R63A	1-247-882-11	CARBON 130K 5% 1/4W
R63B	1-247-885-00	CARBON 180K 5% 1/4W
R64	1-249-426-11	CARBON 5.6K 5% 1/4W
R65B	1-249-428-11	CARBON 8.2K 5% 1/4W
R81	1-249-409-11	CARBON 220 5% 1/4W
R82	1-249-409-11	CARBON 220 5% 1/4W
R83B	1-249-429-11	CARBON 10K 5% 1/4W
R84B	△ 1-212-851-00	FUSIBLE 5.6 5% 1/4W F
R85B	1-249-436-11	CARBON 39K 5% 1/4W
R86B	1-249-436-11	CARBON 39K 5% 1/4W
R001	△ 1-212-939-00	FUSIBLE 1 5% 1/2W F
R002	△ 1-212-939-00	FUSIBLE 1 5% 1/2W F
R003	△ 1-212-939-00	FUSIBLE 1 5% 1/2W F
R004	△ 1-212-939-00	FUSIBLE 1 5% 1/2W F
R101	1-249-433-11	CARBON 22K 5% 1/4W
R102	1-249-417-11	CARBON 1K 5% 1/4W
R103	1-249-421-11	CARBON 2.2K 5% 1/4W
R104	1-249-433-11	CARBON 22K 5% 1/4W
R105	1-249-421-11	CARBON 2.2K 5% 1/4W
R106	1-249-423-11	CARBON 3.3K 5% 1/4W

Note: The components identified by mark **△** or dotted line with mark **△** are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description			
R107	1-249-423-11	CARBON	3.3K	5%	1/4W
R108	1-247-887-00	CARBON	220K	5%	1/4W
R109	1-249-441-11	CARBON	100K	5%	1/4W
R110	1-249-423-11	CARBON	3.3K	5%	1/4W
R111	1-249-428-11	CARBON	8.2K	5%	1/4W
R112	1-247-846-11	CARBON	4.3K	5%	1/4W
R113	1-247-822-11	CARBON	430	5%	1/4W
R114	1-215-430-00	METAL	2.4K	1%	1/6W
R115	1-249-427-11	CARBON	6.8K	5%	1/4W
R116	1-249-415-11	CARBON	680	5%	1/4W
R117	1-249-425-11	CARBON	4.7K	5%	1/4W
R118	1-249-428-11	CARBON	8.2K	5%	1/4W
R119	1-249-421-11	CARBON	2.2K	5%	1/4W
R120	1-249-417-11	CARBON	1K	5%	1/4W
R121	1-249-434-11	CARBON	27K	5%	1/4W
R122	1-249-434-11	CARBON	27K	5%	1/4W
R123	1-249-430-11	CARBON	12K	5%	1/4W
R124	1-249-397-11	CARBON	22	5%	1/4W
R125	1-249-429-11	CARBON	10K	5%	1/4W
R129	1-249-417-11	CARBON	1K	5%	1/4W
R130	1-249-405-11	CARBON	100	5%	1/4W
R146	1-249-430-11	CARBON	12K	5%	1/4W
R201	1-249-433-11	CARBON	22K	5%	1/4W
R202	1-249-417-11	CARBON	1K	5%	1/4W
R203	1-249-421-11	CARBON	2.2K	5%	1/4W
R204	1-249-433-11	CARBON	22K	5%	1/4W
R205	1-249-421-11	CARBON	2.2K	5%	1/4W
R206	1-249-423-11	CARBON	3.3K	5%	1/4W
R207	1-249-423-11	CARBON	3.3K	5%	1/4W
R208	1-247-887-00	CARBON	220K	5%	1/4W
R209	1-249-441-11	CARBON	100K	5%	1/4W
R210	1-249-423-11	CARBON	3.3K	5%	1/4W
R211	1-249-428-11	CARBON	8.2K	5%	1/4W
R212	1-247-846-11	CARBON	4.3K	5%	1/4W
R213	1-247-822-11	CARBON	430	5%	1/4W
R214	1-215-430-00	METAL	2.4K	1%	1/6W
R215	1-249-427-11	CARBON	6.8K	5%	1/4W
R216	1-249-415-11	CARBON	680	5%	1/4W
R217	1-249-425-11	CARBON	4.7K	5%	1/4W
R218	1-249-428-11	CARBON	8.2K	5%	1/4W
R219	1-249-421-11	CARBON	2.2K	5%	1/4W
R220	1-249-417-11	CARBON	1K	5%	1/4W
R221	1-249-434-11	CARBON	27K	5%	1/4W
R222	1-249-434-11	CARBON	27K	5%	1/4W
R223	1-249-430-11	CARBON	12K	5%	1/4W
R224	1-249-397-11	CARBON	22	5%	1/4W
R225	1-249-429-11	CARBON	10K	5%	1/4W
R229	1-249-417-11	CARBON	1K	5%	1/4W
R230	1-249-405-11	CARBON	100	5%	1/4W
R246	1-249-430-11	CARBON	12K	5%	1/4W
R256	1-249-417-11	CARBON	1K	5%	1/4W
R301	1-249-429-11	CARBON	10K	5%	1/4W
R302	1-249-429-11	CARBON	10K	5%	1/4W
R304	1-249-427-11	CARBON	6.8K	5%	1/4W
R305	1-249-427-11	CARBON	6.8K	5%	1/4W
R306	1-249-437-11	CARBON	47K	5%	1/4W
R307	1-249-437-11	CARBON	47K	5%	1/4W

Ref.No.	Part No.	Description			
R308	1-247-864-11	CARBON	24K	5%	1/4W
R309	1-249-429-11	CARBON	10K	5%	1/4W
R310	1-249-417-11	CARBON	1K	5%	1/4W
R311	1-249-434-11	CARBON	27K	5%	1/4W
R312	1-249-435-11	CARBON	33K	5%	1/4W
R313	1-247-860-11	CARBON	16K	5%	1/4W
R314	1-247-872-11	CARBON	51K	5%	1/4W
R315	1-249-438-11	CARBON	56K	5%	1/4W
R316	1-249-434-11	CARBON	27K	5%	1/4W
R317	1-249-438-11	CARBON	56K	5%	1/4W
R318	1-249-437-11	CARBON	47K	5%	1/4W
R319	1-247-868-11	CARBON	36K	5%	1/4W
R320	1-247-872-11	CARBON	51K	5%	1/4W
R321	1-247-870-11	CARBON	43K	5%	1/4W
R322	1-249-435-11	CARBON	33K	5%	1/4W
R323	1-247-846-11	CARBON	4.3K	5%	1/4W
R324	1-249-428-11	CARBON	8.2K	5%	1/4W
R325	1-249-430-11	CARBON	12K	5%	1/4W
R326	1-247-858-11	CARBON	13K	5%	1/4W
R327	1-247-872-11	CARBON	51K	5%	1/4W
R328	1-247-860-11	CARBON	16K	5%	1/4W
R329	1-247-866-11	CARBON	30K	5%	1/4W
R330	1-249-436-11	CARBON	39K	5%	1/4W
R331	1-247-872-11	CARBON	51K	5%	1/4W
R332	1-247-874-11	CARBON	62K	5%	1/4W
R333	1-249-441-11	CARBON	100K	5%	1/4W
R334	1-247-876-11	CARBON	75K	5%	1/4W
R335	1-249-441-11	CARBON	100K	5%	1/4W
R336	1-247-876-11	CARBON	75K	5%	1/4W
R337	1-247-870-11	CARBON	43K	5%	1/4W
R338	1-249-441-11	CARBON	100K	5%	1/4W
R339	1-247-874-11	CARBON	62K	5%	1/4W
R340	1-247-882-11	CARBON	130K	5%	1/4W
R341	1-249-438-11	CARBON	56K	5%	1/4W
R342	1-249-438-11	CARBON	56K	5%	1/4W
R343	1-247-880-11	CARBON	110K	5%	1/4W
R344	1-249-437-11	CARBON	47K	5%	1/4W
R345	1-249-439-11	CARBON	68K	5%	1/4W
R346	1-249-441-11	CARBON	100K	5%	1/4W
R347	1-249-429-11	CARBON	10K	5%	1/4W
R348	1-249-441-11	CARBON	100K	5%	1/4W
R349	1-249-423-11	CARBON	3.3K	5%	1/4W
R350	1-249-417-11	CARBON	1K	5%	1/4W
R351	1-249-428-11	CARBON	8.2K	5%	1/4W
R352	1-249-441-11	CARBON	100K	5%	1/4W
R353	1-249-441-11	CARBON	100K	5%	1/4W
R354	1-249-429-11	CARBON	10K	5%	1/4W
R355	1-247-887-00	CARBON	220K	5%	1/4W
R356	1-249-429-11	CARBON	10K	5%	1/4W
R357	1-249-441-11	CARBON	100K	5%	1/4W
R358	1-249-439-11	CARBON	68K	5%	1/4W
R359	1-249-417-11	CARBON	1K	5%	1/4W
R360	1-249-429-11	CARBON	10K	5%	1/4W
R361	1-249-417-11	CARBON	1K	5%	1/4W
R363	1-249-417-11	CARBON	1K	5%	1/4W
R364	1-249-411-11	CARBON	330	5%	1/4W
R365	1-249-437-11	CARBON	47K	5%	1/4W

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Ref.No.	Part No.	Description			
R366	1-215-469-00	METAL	100K	1%	1/6W
R369	1-249-430-11	CARBON	12K	5%	1/4W
R370	1-247-848-11	CARBON	5.1K	5%	1/4W
R371	1-249-422-11	CARBON	2.7K	5%	1/4W
R372	1-249-437-11	CARBON	47K	5%	1/4W
R501	1-249-421-11	CARBON	2.2K	5%	1/4W
R502	1-249-421-11	CARBON	2.2K	5%	1/4W
R503	1-249-421-11	CARBON	2.2K	5%	1/4W
R504	1-249-421-11	CARBON	2.2K	5%	1/4W
R505	1-249-409-11	CARBON	220	5%	1/4W
R506	1-249-418-11	CARBON	1.2K	5%	1/4W
R507	1-249-417-11	CARBON	1K	5%	1/4W
R508	1-249-421-11	CARBON	2.2K	5%	1/4W
R509	1-249-421-11	CARBON	2.2K	5%	1/4W
R510	1-249-417-11	CARBON	1K	5%	1/4W
R511	1-249-428-11	CARBON	8.2K	5%	1/4W
R512	1-249-432-11	CARBON	18K	5%	1/4W
R513	1-249-423-11	CARBON	3.3K	5%	1/4W
R514	1-249-437-11	CARBON	47K	5%	1/4W
R515	1-249-417-11	CARBON	1K	5%	1/4W
R516	1-249-421-11	CARBON	2.2K	5%	1/4W
R517	1-249-393-11	CARBON	10	5%	1/4W
R518	1-249-437-11	CARBON	47K	5%	1/4W
R521	1-249-437-11	CARBON	47K	5%	1/4W
R522	1-249-425-11	CARBON	4.7K	5%	1/4W
R523	1-249-413-11	CARBON	470	5%	1/4W
R524	1-249-417-11	CARBON	1K	5%	1/4W
R525	1-249-425-11	CARBON	4.7K	5%	1/4W
R527	1-249-429-11	CARBON	10K	5%	1/4W
R528	1-249-421-11	CARBON	2.2K	5%	1/4W
R529	1-249-436-11	CARBON	39K	5%	1/4W
R531	1-247-895-00	CARBON	470K	5%	1/4W
R532	1-249-436-11	CARBON	39K	5%	1/4W
R534	1-247-895-00	CARBON	470K	5%	1/4W
R535	1-249-425-11	CARBON	4.7K	5%	1/4W
R536	1-249-413-11	CARBON	470	5%	1/4W
R537	1-249-417-11	CARBON	1K	5%	1/4W
R538	1-249-425-11	CARBON	4.7K	5%	1/4W
R539	1-249-433-11	CARBON	22K	5%	1/4W
R540	1-249-417-11	CARBON	1K	5%	1/4W
R541	1-249-433-11	CARBON	22K	5%	1/4W
R542	1-249-417-11	CARBON	1K	5%	1/4W
R543	1-249-405-11	CARBON	100	5%	1/4W
R544	1-249-432-11	CARBON	18K	5%	1/4W
R545	1-249-393-11	CARBON	10	5%	1/4W

Ref.No.	Part No.	Description			
R546	1-249-430-11	CARBON	12K	5%	1/4W
R547	1-249-433-11	CARBON	22K	5%	1/4W
R548	1-249-425-11	CARBON	4.7K	5%	1/4W
R549	1-249-433-11	CARBON	22K	5%	1/4W
R550	1-249-437-11	CARBON	47K	5%	1/4W
R551	1-249-430-11	CARBON	12K	5%	1/4W
R552	1-249-437-11	CARBON	47K	5%	1/4W
R553	1-249-425-11	CARBON	4.7K	5%	1/4W
R554	1-249-425-11	CARBON	4.7K	5%	1/4W
R555	1-249-421-11	CARBON	2.2K	5%	1/4W
R556	1-249-417-11	CARBON	1K	5%	1/4W
R558	1-249-413-11	CARBON	470	5%	1/4W
R559	1-249-413-11	CARBON	470	5%	1/4W
R560	1-249-413-11	CARBON	470	5%	1/4W
R561	1-249-412-11	CARBON	390	5%	1/4W
R562	1-249-405-11	CARBON	100	5%	1/4W
R563	1-249-408-11	CARBON	180	5%	1/4W
R564	1-249-409-11	CARBON	220	5%	1/4W
R565	1-249-405-11	CARBON	100	5%	1/4W
R566	1-249-408-11	CARBON	180	5%	1/4W
R567	1-249-408-11	CARBON	180	5%	1/4W
R568	1-249-408-11	CARBON	180	5%	1/4W
R569	1-249-408-11	CARBON	180	5%	1/4W
R570	1-249-429-11	CARBON	10K	5%	1/4W
R571	1-249-418-11	CARBON	1.2K	5%	1/4W
R572	1-249-418-11	CARBON	1.2K	5%	1/4W
R573	1-249-420-11	CARBON	1.8K	5%	1/4W
R574	1-249-418-11	CARBON	1.2K	5%	1/4W
R575	1-249-420-11	CARBON	1.8K	5%	1/4W
R576	1-249-418-11	CARBON	1.2K	5%	1/4W
R577	1-249-420-11	CARBON	1.8K	5%	1/4W
R578	1-249-423-11	CARBON	3.3K	5%	1/4W
R579	1-249-418-11	CARBON	1.2K	5%	1/4W
R580	1-249-420-11	CARBON	1.8K	5%	1/4W
R581	1-249-423-11	CARBON	3.3K	5%	1/4W
R582	1-249-418-11	CARBON	1.2K	5%	1/4W
R583	1-249-420-11	CARBON	1.8K	5%	1/4W
R584	1-249-430-11	CARBON	12K	5%	1/4W
R585	1-247-842-11	CARBON	3K	5%	1/4W
R586	1-249-405-11	CARBON	100	5%	1/4W
R587	1-249-437-11	CARBON	47K	5%	1/4W
R801	1-249-421-11	CARBON	2.2K	5%	1/4W
R802	1-249-421-11	CARBON	2.2K	5%	1/4W
R803	1-249-429-11	CARBON	10K	5%	1/4W
R804	1-249-437-11	CARBON	47K	5%	1/4W

Ref.No.	Part No.	Description
R805	1-249-437-11	CARBON 47K 5% 1/4W
R806	1-249-429-11	CARBON 10K 5% 1/4W
R807	1-249-437-11	CARBON 47K 5% 1/4W
R808	1-249-425-11	CARBON 4.7K 5% 1/4W
R809	1-249-437-11	CARBON 47K 5% 1/4W
R821	1-249-428-11	CARBON 8.2K 5% 1/4W
R822	1-249-423-11	CARBON 3.3K 5% 1/4W
RV41	1-228-989-00	RES, ADJ, CARBON 470
RV61	1-228-989-00	RES, ADJ, CARBON 470
RV101	1-228-994-00	RES, ADJ, CARBON 10K
RV201	1-228-994-00	RES, ADJ, CARBON 10K
RV301	1-238-139-11	RES, VAR, CARBON 20K/20K (BALANCE)
RV302	1-238-138-11	RES, VAR, CARBON 50K/50K (VOLUME)
RV501	1-228-996-00	RES, ADJ, CARBON 47K
RY81	1-515-614-11	RELAY
S11	1-571-281-21	SWITCH, LEAF
S12B	1-571-281-21	SWITCH, LEAF
S13B	1-571-281-21	SWITCH, LEAF
S14A	1-571-281-21	SWITCH, LEAF
S301	1-570-837-11	SWITCH, SLIDE (TAPE SELECT)
S302	1-570-837-11	SWITCH, SLIDE (DOLBY NR)
S501	1-553-336-21	SWITCH, PUSH (POWER)
S502	1-570-837-11	SWITCH, SLIDE (TIMER)
S503	1-570-837-11	SWITCH, SLIDE (DIRECTION)
S504	1-554-303-21	SWITCH, KEY BOARD (A-FWD)
S505	1-554-303-21	SWITCH, KEY BOARD (A-REV)
S506	1-554-303-21	SWITCH, KEY BOARD (A-STOP)
S507	1-554-303-21	SWITCH, KEY BOARD (A-REW)
S508	1-554-303-21	SWITCH, KEY BOARD (A-FF)
S509	1-554-303-21	SWITCH, KEY BOARD (B-PAUSE)
S510	1-554-303-21	SWITCH, KEY BOARD (B-FWD)
S511	1-554-303-21	SWITCH, KEY BOARD (B-REV)
S512	1-554-303-21	SWITCH, KEY BOARD (B-REC MUTE)
S513	1-554-303-21	SWITCH, KEY BOARD (B-STOP)
S514	1-554-303-21	SWITCH, KEY BOARD (B-REW)
S515	1-554-303-21	SWITCH, KEY BOARD (B-FF)
S516	1-554-303-21	SWITCH, KEY BOARD (B-REC)
S517	1-554-303-21	SWITCH, KEY BOARD (AUTO PAUSE)
S518	1-554-303-21	SWITCH, KEY BOARD (NORMAL SPEED)
S519	1-554-303-21	SWITCH, KEY BOARD (HIGH SPEED)
S520	1-554-303-21	SWITCH, KEY BOARD (AMS)
S801	1-554-303-21	SWITCH, KEY BOARD (RESET)
S802	1-554-303-21	SWITCH, KEY BOARD (MEMORY)
S803	1-554-303-21	SWITCH, KEY BOARD (A/B)

Ref.No.	Part No.	Description
SPK101	1-235-186-00	ENCAPSULATED COMPONENT
SPK201	1-235-186-00	ENCAPSULATED COMPONENT
T1	△ 1-449-223-11	TRANSFORMER, POWER
T81	1-433-333-11	TRANSFORMER, BIAS OSCILLATION
X501	1-567-772-11	VIBRATOR, CERAMIC 4.19MHz
X801	1-567-771-11	VIBRATOR, CERAMIC 6MHz

ACCESSORY & PACKING MATERIAL

1-558-233-11	CORD (WITH CONNECTOR)(SIRCS) 4P
1-559-533-11	CORD, CONNECTION
3-769-908-11	(AEP model).....MANUAL, INSTRUCTION
3-769-908-41	MANUAL, INSTRUCTION
*3-332-555-01	CUSHION
*3-346-325-11	INDIVIDUAL CARTON
*3-704-343-01	SHEET (STANDARD), PROTECTION

Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

TROUBLESHOOTING GUIDE






Before proceeding with these trouble checks, first check these basic points:

- The power cord is firmly connected.
- Amplifier connections are firmly made.
- Heads, capstans and pinch rollers are clean.
- The amplifier controls and switches are set correctly.

FUNCTION BUTTONS AND TAPE TRANSPORT PROBLEMS

Symptom	Cause	Remedy
Function buttons do not activate.	Cassette holder is not fully closed.	Close the holder completely.
● button does not activate.	No cassette in the holder.	Insert a cassette.
	Tab has been removed from the cassette.	Cover the hole with plastic tape.
Automatic shut-off mechanism activates before the tape comes to its end.	Tape is slack.	Take up the tape slack.
	Cassette shell is deformed.	Use another cassette.
	The inside of the cassette holder is illuminated by strong light.	Remove the light source.
Excessively loud tape transport noise when rewinding or fast-forwarding	This depends on the cassette used and is not a problem.	—

RECORDING AND PLAYBACK PROBLEMS

Symptom	Cause	Remedy
Auto reverse function does not operate.	DIRECTION MODE selector is set to  .	Set DIRECTION MODE to  .
Recording or playback cannot be made or there is a decrease in sound level.	Record/playback and erase heads are either dirty or magnetized.	Clean or demagnetize the heads.
	Improper connection	Make connections properly.
	Improper setting of the amplifier controls	Set the amplifier controls to the appropriate positions.
Excessive wow, flutter or dropout	Head, capstan or pinch roller is dirty.	Clean in accordance with instructions.
Incomplete erasure	Erase head is dirty.	Clean the erase head.
Increased noise or poor reproduction in high frequencies	Head is magnetized.	Demagnetize the head.
Unbalanced tone in high frequencies	Improper setting of the DOLBY NR switch.	When playing back, set the switch to the same position used in recording.
	Improper setting of the TAPE SELECT switch.	If recorded with the wrong switch setting, adjust the tone controls of the amplifier in playback.
	The unit is placed near a television set.	Move the deck away from the television set.
The desired selection cannot be located even if you activate the AMS.	• There is noise in the space between selections.	—
	• The space is less than 4 seconds long.	Press  to insert a longer blank space.
	• The  or  button is pressed immediately before or after the beginning of the following selection.	—
Playback or fast-winding may begin in the middle of the selection when AMS or blank skip is activated.	• The following will be treated as blanks: — a long pause in the music — a passage of low frequencies or very low volume — gradual increase or decrease of volume	—

NOISE

Symptom	Cause	Remedy
Hum noise	The deck is stacked on or under the amplifier.	Separate the units.
Noise is recorded.	Recording was made near such equipment as a television set or a color monitor, and the interference has affected the recording on the tape and the Dolby NR system.	Move the unit away from television set or color monitor.